CUK-H04739-35-P004434

ASLIB PROCEEDINGS

INDEX

Volume 39, 1987

INDEX

35

AUTHOR INDEX

Ashford, John, 'Information for the City: a role for free text systems', 327–336

Bixby, Bob, 'Introduction to "The M25. Planning, Development and Transport" seminar, 18 April 1986', 39.
Brindley, Lynne, 'Management development for information professionals of the future', 235–243.

Calvert, Gordon, 'The paperless office', 197–200.
Cronin, Blaise and Davenport, Lizzie, 'Goverment policies and the information industry–the balance of interests', 159–167.
Cronin, Blaise and Gudin, Mairi, 'Excellence under the microscope', 17–31
Cronin, Blaise, 'Telematics and retribalisation', 87–95

Davenport, Lizzie and Cronin, Blaise, 'Government policies and the information industry—the balance of interests', 159–167.
Drew, Rodney, 'How the organisation works', 205–208.

Erbach, Gertrud, Nicholas, David and Harris, Kevin, 'End-users: threat, challenge or myth?', 337–344.

Feldman, David, 'Leadership as a resource—interpersonal skills', 299–301.

Gilchrist, Alan, 'Information technology and information work', 313–325.
Gudin, Mairi and Cronin, Blaise, 'Excellence under the microscope', 17–21

Hall, David, 'Issues facing learned libraries', 245–348.
Hannabus, Stuart, 'The concept of performance: a semantic review', 149–158.
Harris, Kevin, Erbach, Gertrud and Nicholas, David, 'End-users· threat, challenge or myth?', 337–344.
Haygarth Jackson, Angela R., 'Pharmaceuticals—an information based industry', 75–86.
Heery, Michael, 'Polytechnic libraries and academic research: a case study from Brighton Polytechnic', 123–133.
Horton, Forest Woody Jr., 'The impact of information management on corporate cultures', 267–274.
Horwill, Cherry and Lambert, Peter, '1-man—100 votes: a new approach to reviewing periodicals subscriptions at the University of Sussex', 7–15.
Hyams, Monty, 'Information for chemists a European viewpoint', 169–181.

Lambert, Peter and Horwill, Cherry, '1-man—100 votes: a new approach to reviewing periodicals subscriptions at the University of Sussex', 7–15.
Lang, Doreen, 'Sources of information/documentation on the M25', 56–65.
Lewis, Dennis A., 'Director's report on ASLIB', 225–230.

MacMorrow, Noreen, 'Are you sitting comfortably?', 97–105.
MacMorrow, Noreen, 'Do VDUs make you sick?', 65–74
Marghalani, Muhammad A., 'Factors affecting information technology transfer in developing countries', 355–359.
Mason, Jef, 'Information, strategy and people', 303–312
McLean, Neil, 'A bigger slice: cost justification for library and information services', 293–297
Melody, William H , 'Innovative research in support of more informed decision making', 187–192.
Morgan, Gareth, 'Retailing and the M25. a review of studies', 48–56.

Nicholas, David, Erbach, Gertrud and Harris, Kevin, 'End-users. threat, challenge or myth?' 337–344

Pattie, Geoffrey (MP), 'Opening address—59th ASLIB Annual Conference· "The Adaptive Information Manager", 17–20 March 1987', 201–203.
Pickup, John, 'What business are we really in?', 281–291

Read, Charles N., 'Introduction: Chairman's address (Confederation of Information Communications Industries General assembly, 11 December 1986)', 181–185.
Read, Nick, 'The advisory role and changes in agricultural information', 33–38.
Repo, Aatto J., 'Pilot study of the value of secondary information: discussions from the viewpoints of information providers and users', 135–147.
Rigglesford, David, 'Breaking free: survival and growth in a commercial climate', 261–266.
Rodger, Elizabeth, 'The evaluation of libraries and information services in times of economic restraint', 349–354.

Shute, Alison, 'A responsibility to change', 219–224.
Simmons, Martin, 'South East Regional planning and the M25: the SERPLAN Regional Monitoring Group', 40–48.
Smith, Roy, 'Marketing the library', 231–233

Tapper, Richard, 'Building the Domesday database—lessons for integrated database development', 107–121.
Telling, Penny, 'Effective in-company communication—a case study', 245–253.

Wares, Christine M., 'How to spend #10 million without really trying', 209–217
Wilson, Alex, 'The information rich and the information poor', 1–6
Wilson, Tom, 'Information for business: the business of information', 275–279.
Worlock, David, 'Implementing the information audit', 255–260.
Worlock, David, 'Information policy progress: a UK—EEC update', 193–196.

SUBJECT INDEX

ACOMPLINE database 63–64
ADONIS Project 180
Agricultural Development and Advisory Service (ADAS) 33–37
Agricultural information 33–37
  charging for 35–37
  online searching 35
  role of advisers & consultants 33–35
Alvey Programme 187
Aslib 225–230
  accommodation 226
  business strategy 226–227
  courses, seminars & conferences 225
  membership services 225–226
  publications 240
  report for 1986/87 225–230
Aslib Information Management Forum (AIMF) 225
Aslib Information Resources Centre 225, 228
ASSASSIN computer software 78

BIOSIS database 80, 82
BLAISE online information service 348
Boolean logic 78
Brighton Polytechnic 128–131
  current awareness services 128–129
  inter library loans 129
  online searching 128
  referral services 131
British Aerospace, Filton 245–253
  internal communications 248–253
  noticeboards/house magazine 250
  suggestion schemes 251
British Library, Document Supply Centre (DSC) 83, 85
British Library, National Preservation Office 347
British Library, Research & Development Department (R&DD) 347
British Library, Science Reference Information Service (SRIS) 79
Broadcasting policy (IT aspects) 183–185
Business information 276–279, 327–344
  in business schools 278
  indexing & storage 332–336
  teaching (lack of) in library schools 278
  use in City firms 327–344
Businesses, information requirements 275–279, 327–344
  in City firms 327–344
  internal 277–278
  online sources 278
  statistical sources 278

Camden public library services, finance 209–217

CD-ROM 179, 259, 314, 315, 334
Censorship 5–6
Centre for Communication and Information Studies (CCIS) (Polytechnic of Central London) 188–189
Centre for Research into Innovation and Culture of Technology, Brunel University 192
Centre for Urban and Regional Development Studies (CURDS) (University of Newcastle-upon-Tyne) 188
Charging for services 90, 237, 263–264, 353
Chemical Abstracts 82, 169, 176, 178, 181
Chemical information 169–181
  patent searching 169–181
  reactions 175–177
  statistical analysis 173–175
CICI 181–185, 201, 228–229
City business firms, information requirements 327–344
  forms of information required 329–331
  quality 331–332
  role of librarians/information workers 342–343
  types of information required 327–329
Company information 82–83, 338–344
  see also City business firms, information requirements
Computers *see* Information technology
Computopia (concept of) 93–95
Confederation of Information and Communication Industries *see* CICI
Conference proceedings (as information source) 79–80
Convivial organisations (concept of) 89–92
Copyright 203, 227–228
Corporate culture 23–24, 28–29
Current awareness services 128–129, 136
  economic aspects 136–139

Department of Management Sciences, UMIST 192
Derwent Publications Ltd 79, 178, 181
Developing countries, library services in 355–359
DIALOG online service 2
Digital Equipment Corporation (DEC) 197–200
Dissemination of information 1–6
  distribution patterns 2
  economic aspects 2
Domesday Project 107–121
  database compilation 112–114
  database description 108
  database design 109–112
  sources of data 113–114
Downloading 332–333, 334

Economic and Social Research Council *see* ESRC
Electronic mail 198–200, 328
Electronic publishing 159
Electronic Publishing Conference (Nov. 1986) 195–196
Electronic revolution (concept of) 1–6
EMBASE database 80, 82
Employee Relation Resource Centre 261
End-users (in City firms) 337–344
ESRC 188–192
EURONET data network 177
Excellence, corporate *see* Organisational excellence
Expert systems 314
Eye strain, role of VDUs 69–70

ICI Pharmaceuticals Division, information services 76–86
  accommodation 84
  costs 83–84
  in-house databases 84
  internal sources 77–78
  external sources 78–84
In-company communications 245–253
In-house bulletins (as information source) 80–81
Information as tradable commodity 92, 193–196, 201–203
Information audit 255–260
  utility analysis 257–260
Information economics 181–183
  infrastructure 182–183
  markets 182
  policy aspects 182–183
Information industry 159–166, 187–190, 261–266
  corporate configuration of 159
  finance & administration 263–264
  management of change 264–265
  market factors 261–266
  staff 265–266
Information industry (in UK) 187–190

ESRC research fields 189–190
Information management 267–274, 282–291
  defined 275
  handling existing information 286–287
  internal compared with external information 283–285
  scientific/commercial data 289–290
Information Partnership (The) 225
Information policies 1–6, 159–166, 193–196, 201–203
  effects of lobbying 161–162
  in UK and EEC 193–196, 201–203
  national interest 160
  policy making bodies in UK 162–163
  policy making bodies in USA 160–161
Information profession 281–291
  definition of role 281–283
Information Resources Centre (Aslib) 225
Information services, role of governments 3, 4
Information strategy 303–312
  elements of 306–309
  examples of need for 303–305
  implementation 311
  organisation & management 305–306
  revolutionary change 309–310
Information technology 1–6, 201–203, 222–223, 236–237, 281–291, 313–324
  defined 313
Information Technology Advisory Panel (ITAP) report 3, 201, 202
Information technology transfer (to developing countries) 355–359
Information work 317–324
  defined 317–319
  economic factors 319–321
  growth areas 321
  infrastructure 322–324
  market forces 321–322
Innovation (in companies) 18, 24–27
Integrated services digital networks (ISDNs) 314

KWIC indexing 78

Leadership skills (for library managers) 299–301
Learned society libraries 345–348
  automation 348
  finance & accommodation 345–346
  preservation of stock 347–348
  security 346–347
  selection of stock 345
LEXIS online service 2
Library Association Code of Conduct 4, 5
Library collections 293–297
  acquisition & maintenance 293–297
  cost accounting for 294–296
  need to compete for resources 293–294
London Science Centre 345

M25 Impact Study 42–43
M25 motorway 39–65
  effects on retailing 49–56
  regional effects 45–48
  sources of information 57–65
Managerial skills (for information professionals) 235–242
  future prospects 238–241
  need for education 241–242
Managerial style 18–19
Manipulative organisations (concept of) 89–92
Matthew effect (information rich & information poor) 92
McLuhan, Marshall 87–88
MEDLINE database 80, 82

National Preservation Office (British Library) 347
  North/South economic divide 2

OCLC database 348
Online catalogues 8
Online searching 81, 84, 127–128, 129, 174–179, 328–329, 338–344
Open standards interconnection (OSI) 203
Organisational change 205–208, 219–224
  in libraries 219–224
  strategic aspects 205–206
Organisational culture 267–274
Organisational excellence 17–29
  economic factors 28
Organisational structure 267
  characteristics 269–274
  image of the organisation 269
  power structures 268–269
Organisations 17–29

- conflict 20, 27
- customer relations 22
- employee motivation 27
- role of people 20–21
- structure 19–20
- training 21
- use of information technology 22–23
- *see also* Manipulative organisations; Convivial organisations

Paperless office (concept of) 197–200
- communication aspects 198

Patent information 78
Patent searching 169–181
Performance (concept of) 149–157
- defined 149–150
- in libraries 153
- measures of 155–156

Periodicals subscriptions (survey at University of Sussex) 7–16
Pharmaceutical industry (use of information) 75–86
PIRATE project 221
Polytechnic libraries 123–132
- current awareness services 128–129
- funding 125
- online searching 127–128
- referral services 131
- research collections 123–132
- use of interlibrary loans 129

Pregnancy, effects of VDUs in 66–69
Primary journals 81
Programme on Information and Communication Technologies (PICT) 188–192
- funding 190
- participation by government & industry 190

Public libraries 4, 90, 209–217, 219–224, 231–233
- as local community information centres 221–223
- charging for services 90
- general reference services 224
- marketing 231–233

Regional monitoring in the South East (by SERPLAN) 42–45
- demography 44
- economics 44
- housing 44
- retailing 45
- transport 45

Research Centre for Social Sciences, University of Edinburgh 192
Research libraries 3, 345–348
- *see also* University libraries

Retail impact studies 52–56
Retailing, effects of M25 49–56
- types of retailing unit 50–52

Retribalisation (concept of) 87–95
Reviews (as information source) 82
Ringdoc service 81

Science Policy Research Unit (SPRU) (University of Sussex) 188
Secondary information sources 81–82, 135–147
- usefulness 141–143

Selective Dissemination of Information (SDI) services 80
SERPLAN (South East regional planning forum) 41–48
Sheffield University Biomedical Information Services (SUBIS) 135–144
- *see also* SUBIS bulletins

Social developments 91–92
South Molton Community Information project 220
Standing Conference of National and University Libraries (SCONUL) 350
Statistical information 83
Stress, role of VDUs 73–74
SUBIS bulletins 138–141

Technological development 88, 90–91
- effects on working & living conditions 93–95
- *see also* Information technology

Telecommunications policies 163–165
- in UK 165
- in USA 163–165

Telecommunications policy (IT aspects) 183–185
Telematics (concept of) 87–95
Telesystemes-DARC (chemical information service) 169, 170, 174
Textline (online business information service) 338–340

University libraries 349–353
- evaluation by academics 352
- evaluation by library staff 350
- evaluation by students 351–352

  funding 349–350
  staff costs 350
URBALINE database 63–64

VANGUARD project 194
VDUs 65–74, 97–104
  effects in pregnancy 66–69
  ergonomic aspects of 97–104
  eye strain 69–70
  health aspects of 65–74
  job satisfaction considerations 102–103
  migraine 70–71
  muscular pain 71–73
  photosensitive epilepsy 71
  skin rashes 73
  stress 73–74
  training considerations 103–104
Videodiscs 107–114
Visual display units *see* VDUs
Voicebank (electronic mail system) 199

Aslib

PROCEEDINGS

v 39 no, 1-12, 1987

Volume 39 Number 1 January 1987

The information rich and the information poor 1
Alex Wilson

1 man – 100 votes: a new approach to reviewing periodicals subscriptions at the University of Sussex 7
Cherry Horwill and Peter Lambert

Excellence under the microscope 17
Blaise Cronin and Mairi Gudim

The advisory role and changes in agricultural information 33
Nick Read

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 JANUARY 1987 Number 1

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £50 (UK)/£60 (overseas); additional subscription to members: £30/£35. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, *Aslib Proceedings,* Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

010.5
As 52 Proc.

The information rich and the information poor

Alex Wilson

Director General, Humanities and Social Sciences, British Library

Paper presented at the Aslib Social Sciences Information Group Annual General Meeting, 6 March 1986.

> 'Information is a resource of immense economic and social value. It is vital to the proper functioning of a democratic society, a crucial tool in a productive economy and an effective government, a central part of the growth and well-being of individuals'.[1]

Since the USA leads the world in information technology and in electronic information products and services, it is natural that our American colleagues have led the way in discussing the moral and political issues lying behind national information policy. I am pleased that, by giving me this title, ASSIG is doing its part in raising the level of debate among the library and information science profession in the UK. I want to discuss trends in access to information by various groups in society; particularly as they are affected by new technology. I start from the premise that the professional ethic of librarians and information workers supports the ideal of free and equal access to knowledge, as one pillar in the temple of democratic society; and that we regard this as an international responsibility.

Public interest in the dissemination of information is to some extent in conflict with the rights of the creators of information and their business partners; that is what copyright legislation is about. As always, it is a question of balance. The emphasis is switching to the owners, e.g: 'We would give prominence . . . to the protection of the commercial value of information . . . '[2].

Not only library and information workers, but educationalists, museum curators, community workers and others are all involved in the attempt to make less unequal the ability of individuals to access and use information. Libraries can be seen in part as a compensating device, a safety valve if you like, providing opportunities for those disadvantaged in intellectual and cultural opportunities; but they are also a cooperative device whereby society widens its resources and services. Librarians, in public libraries at least, have to balance these objectives

The ability of public libraries and other publicly supported libraries to be effective in the dissemination of information is threatened by three influences:

Aslib Proceedings, 39 (1), January 1987, p 1–6 Printed in Great Britain

1. economic stringency,
2. the changed pattern of distribution and charging for information emerging from the application of new technology – whereby the cost of service to a user becomes obvious;
3. ideological considerations; often by governments or local governments thinking to impose censorship but sometimes by members of our profession not only acceding to but enthusiastically going along with censorship.

There has always been inequality of opportunity to be informed and to learn from information. All that information technology (IT) does is to accentuate it. Traditionally, 'to him that hath shall be given' in information as in wealth creation and power. Study and information-seeking are habits and arise as much and probably more from one's early background at home and school and from one's working environment as an adult, than they do from native intelligence or intellectual curiosity. The enormous success of Asian immigrants in the USA and Canada in recent years is one vivid proof of that fact. So people start off with various handicaps, even if they are given the same access to knowledge and information in adult life.

I had promised in my *précis* to give something of a tour of the horizon from personal experience, about the imbalance of information access. I have decided to spare you that and would invite you instead to walk around some of the seesaws in the park of human activity.

First of all, the USA and the rest. Driven by defence and space investment (DIALOG and LEXIS were developed by companies which are heavily dependent on defence contracts), supported by an attitude to business life which makes Americans keen for change and new ideas, and developed by a technically efficient infrastructure, the USA now dominates the world in information technology and in electronic manipulation and transmission of information. Essentially they have pinned their faith upon private sector exploitation. In the EEC it is seen as vital to long-term interests to create a European information industry, and this has necessarily meant heavy government subsidy and intervention. Even so, very few European databases can be truly profit-making and one suspects that the use of non-English language databases is often due to linguistic difficulties rather than their superiority over other sources.

The second great divide is between north and south, between the Western economies and the third world. In terms of print-based information, the third world is already suffering disadvantages but the sophisticated infrastructure required for participation in IT is so lacking as to place them mostly outside the pale of participation. If you have not got even reliable mains electricity or air conditioning systems, it is not much good hoping for sophisticated computer centres and satellite telecommunications.

Within each Western society the 'haves' and 'have-nots', in wealth terms, are being reflected in the capacity to participate in the IT revolution. On his recent lecture tour, Ken Dowlin, Director of the Pikes Peak Library District, Colorado, told how millions of dollars of public investment have enabled him to put his library records, including many community files, online, and, allow access from the home to hundreds, and soon thousands, of citizens. His library is developing both as an information resource and as a communications centre; a host for all the local information providers in the locality and an access point to world resources. All of these remarkable facilities (known as 'Maggie's Place') are of course available in-house, but for remote use one needs to be a computer literate person with access to a communicating word processor. This is far from the scruffy little shopfronts from which devoted community workers dispense information from sheets of paper and card files, to the less privileged citizens of the inner cities. These centres, in turn, would be looked at with enormous envy by people who have no community access to information whatsoever, as is the case in so many cities of the world.

Within business and industry, large and medium-sized firms have always paid more attention to information as a resource and this divide from the small business is widening, at least in terms of online use.

Governments are more and more able to aggregate and manipulate the information they have in hundreds and thousands of different places about individuals and firms, and to block off not just the opposition but the general public from information which it is inconvenient for them to have. This attitude is typical of all governments, and one of the main considerations in the NCLIS report, previously mentioned, as also in the ITAP report in the UK, is to open up government information for exploitation by the private sector. Libraries stand somewhere halfway in this process, and may have mixed views about the free exploitation of information which they have generated at great cost, by that sector with which to some degree they are in competition.

Our research libraries in universities and elsewhere are facing an increasing problem due to the growth in titles and in prices of scientific and technical serials literature, which is threatening their ability to buy adequately for humanities researchers. There is concern about the relatively low use of online services by humanities scholars; whether as cause or effect, they have very few significant databases to consult.

I could go on, but I hope that is enough to show that however you analyse society on a macro or a micro scale, existing differences of wealth, education and environment are being accentuated by our relative ability to use IT. The new technology is not something totally different; it supports print and complements it in the long continuum of communication development from the days when we first acquired the powers of speech and gesture. There is a technical problem, that IT is developing in a chaotic way, without agreed standards and coordination and compares most unfavourably with the bibliographical control which the library profession internationally has managed to impose upon print. This must lead to a considerable waste of total investment, but perhaps it is a necessary stage of evolution. Libraries are not much regarded by those concerned with IT policy and perhaps it is time that we informed them loud and clear of the fact that librarians and information scientists have established techniques for the control and dissemination of information in printed form, whose principles might be relevant to this new medium.

The main argument about how to optimise the information resources of a country revolves around the relative place of government and the private sector The American answer is that profit must be encouraged and that government should lead and not manage This is also seen as giving the end-consumer better value for money (what he wants rather than what government says he needs). The problem of those who are unable to pay the necessary costs is left to government to solve.

For the LIS professions, the electronic revolution is accentuating the approach of the information scientists more than that of the traditional librarian. Information is not much use unless it is relevant and timely and the LIS worker is more and more having to be a subject expert in him or herself, or more likely, to work with specialists in the analysis and dissemination of information This is as true of the information workers supporting research in government or industry, as it is of the librarian working with a team in community service.

So what are the key issues? One clearly is the degree of public/private sector involvement in IT. Related to this is the question of who should pay. There is the question of national capability as against international availability.

Are public libraries and other publicly supported libraries part of government or do they belong to a third sector, 'not-for-profit'? What is the role of libraries in regard to IT? Are they to accentuate their cooperative role as providing some of the points of access (I take it for granted that libraries will be increasingly bypassed by services to the end-user direct from the database) or are libraries to emphasise their support for the information disadvantaged? In a fully market economy, publicly supported libraries could be seen as aggregating and expressing as effective demand the requirements of those who cannot afford to pay. To some, this may be a thoroughly distasteful approach, as if the libraries were to be intellectual 'soup-kitchens', ensuring that every citizen is maintained at a 'subsistence level' for information, comparable to those for food and housing. This last is an actual quote from the NCLIS study already mentioned.

However, we must face the fact that we are moving towards payment on demand with online services and perhaps for some new uses of printed products, and that the high and obvious cost of providing citizens with access places in doubt the practicality of maintaining that 'free access' means 'free of charge', as did the White House Conference on Libraries and Information Service.

> 'All persons should have free access, without charge or fee to the individual, to information in public and publicly supported libraries'

Of course, there is a 'get-out' that the information bought in by means of IT is not in the library, but one scarcely feels that was in the minds of the drafters of that resolution.

We, in our LA code of conduct, have a similar statement, but it falls short of reference to payment:

> 'To protect and promote the rights of every individual to have free and equal access to sources of information without discrimination and within the limits of the law'

Our museum colleagues are faced with a similar dilemma and it was interesting to find Dr Neil Cossons (the new Director of the Science Museum) saying·

> 'I was and still am ambivalent about admission charges, because they are discriminatory. But the economic facts of life call for pragmatism and I see no virtue in saying "Never will we charge" and proceeding to close on Mondays, then on Tuesdays, then shut down galleries, then sack half the staff'

Public librarians had this dilemma over the provision of collections of sound recordings, when some simply refused to charge for use (which they are allowed to do) whereas others, despairing of attracting additional public funds for this new service, saw it as ridiculous to deprive the public of a facility which many of them would want to use and would be prepared to pay for. The principle of free access is a noble one, and easily followed, so long as you can attract extra resources. But if you are working on a dwindling budget and the choice is between free access to increasingly mediocre and unsatisfactory services, or unrestricted access by payment to the whole spectrum of information and cultural resources demanded by modern citizens, then you begin to qualify the word 'free'.

When I wrote the chapter on public libraries in the *LA Centenary volume* (1976), I hazarded a guess that by this time, ten years on, public libraries would be divided more sharply into types, and one of those types was as a service to the economically and culturally disadvantaged, giving much less attention to the traditional recreational services. I believe this has happened to some extent in some library systems of our bigger cities, and if one takes that point of view, it would be equally possible to exploit this considerable potential of IT, for disseminating community information, at any rate in-house; a Maggie's Place but not offering a service 'to go'; except to the prosperous users having access to communicating word processors.

In more dignified terms, our American colleagues are suggesting that equity should replace equality as the watchword. That is, there should be reasonable justice not absolute equality of access and this of course accords with the American philosophy of self-help.

I would like to end with a few words about censorship. The LA have nailed their colours to the mast with a code of conduct which demands that individuals should have free and equal access to any information that they reasonably require for their life, work or personal interest, so long as it is within the law. The law of the land is the arbiter of what is permitted. Yet we have disturbing signs that politically motivated Councils, and sometimes officers of Councils, are withholding publications from citizens on ideological grounds. South Africa is one example, and the banning of newspapers involved in a dispute is the latest. It may seem less controversial, but the witch-hunts through children's libraries for publications which, in the opinion of some librarian or Councillor, create prejudice against groups of a particular race, belief or gender, fill me with a certain apprehension. I remember with pride that copies of Hitler's *Mein Kampf* remained on the open shelves of our public libraries at a time when this country was fighting for its life against the detestable doctrines of the Nazis, of which that book was the testament. That was a symbol, in our modest way, of what we were fighting to protect.

REFERENCES

1 *Public sector/private sector interaction in providing information services,* report to National Commission on Libraries and Information Science, February 1982.
2. ITAP Report, 6.13.

1 man – 100 votes: a new approach to reviewing periodicals subscriptions at the University of Sussex

Cherry Horwill and Peter Lambert

University of Sussex Library

Members of staff and D.Phil. students were sent lists of current periodicals titles thought likely to be of interest to them, and given 100 votes to indicate the value they placed on the titles, titles not on the lists could be added Votes were analysed using the library's computer. Lists of titles for cancellation, subscription and deferral were circulated for comment. After consequent modification, 164 cancellations and 74 new subscriptions were made, rebalancing resources from humanities to sciences. Other uses for the data have been found also.

Introduction

Like most libraries, that at the University of Sussex has suffered cuts in its spending power, causing three fairly substantial cancellations of periodicals subscriptions since 1974. Unexpected increases in the amount of money available has twice allowed some new subscriptions to be placed, with some rebalancing of the list; but generally the only way new titles could be added was by 'barter deals' whereby, with the agreement of all relevant parties, an existing subscription could be replaced by a new one of similar cost in the same subject area. This was not always easy – Sussex aims to be interdisciplinary, and most titles are of interest to more than one group. So requests for new subscriptions had become all but stifled, especially in new subject areas.

It was felt in Autumn 1984, therefore, that we should attempt a review of our subscriptions which we hoped would primarily be a major rebalancing of our expenditure, rather than being purely an attempt at saving money. However, the review was conducted in a way which would have made money-saving possible, if necessary.

In the previous reviews consultation had always taken place with groups of academic staff, with several disadvantages:

- individuals' interests may have suffered at the hands of powerful colleagues;
- levels of support for specific titles were not clear;
- absentees might not be consulted;
- non-teaching Research Units outside the group structure had no say.

So, it was decided that the 1985 review should be on a personal basis. Individuals would receive lists of titles likely to be relevant, and would be asked

Aslib Proceedings 39 (1) January 1987 p 7–16 Printed in Great Britain

to reflect their teaching and research needs by distributing up to 100 votes among titles actually of interest.

The Sussex context

To foster its interdisciplinarity, Sussex has schools and subject groups instead of the more usual faculty/department hierarchy In the arts and social studies areas the structure is complex. Each member of academic staff has a subject group of primary allegiance and maybe a group of secondary allegiance also, and is based in any one of five schools (African and Asian Studies, Cultural and Community Studies, English and American Studies, European Studies, or Social Sciences). A subject may be offered for study in any of the schools. Lists sent to subject group chairmen did not always reflect the variety of interests of individuals in the group. The science area structure is closer to that of the traditional faculty/department, but the divisions are by no means watertight.

Each member of senior library staff acts as a 'subject librarian' – i.e. a contact for one or more subject groups, and several subject groups also have a member who acts as their representative to the library. There is no executive library committee, but there is a Library Consultative Group, consisting of members from most areas of the University.

The library has its own Geac 8000 minicomputer, supporting, *inter alia*, an online catalogue[1], with records for all current serials and a growing number of dead titles also[2] The relevant files and programming for serials have been developed locally, and before this review began, most of the data needed had been already recorded. This includes title and holdings, classmark, three years' cost data, and a coded record of the subject groups to whom each title is expected to be of interest on the basis of replies to previous reviews. There are also codes which allow us to produce lists of titles which are potentially of interest to more than three groups – Generalia, General Sciences, etc.

Preparatory work

A small working group was set up, consisting of the Deputy Librarian, (Adrian Peasgood, who had the idea for this new approach to reviewing periodicals subscriptions, and who has overall responsibility for all acquisitions), the Head of Documents, (David Kennelly), and the authors (respectively Head of Periodicals and a member of system staff). The first plan was to approach teaching and research staff only, but some library colleagues requested us to send lists also to D.Phil. students registered with the library. We already had the information needed to produce subject related lists of titles, but we needed to work out which lists should go to which people, based on the latters' individual subject or research allegiances.

The University Salaries Office and various research units provided us with lists of staff in (effectively) subject group order, and their job titles (e.g. Reader in American Literature). These lists were then marked up to show the subject lists to be sent to each individual, and not every member of a group necessarily received identical lists. For example, all members of American Studies received the American Studies, General Humanities and Generalia lists, but those teaching American history also received the History and General Social Science lists, and those teaching American Literature also received the General Literature lists. Members of research units, for whom we did not have enough information for us even to guess which subject lists might be suitable, were sent letters outlining the intended review, reciting the lists available, and asking them to tell us which lists they wanted. We had answers from about half, requesting up to 12 lists per person. Lists of D.Phil. students were similarly obtained and marked up, but we had less detailed subject information for these.

When all the names were marked up with the subject lists to be received, the number of copies of each subject list needed was calculated. Programs were run to select relevant titles administered by the Periodicals Section and to set up a file to produce the lists by laser printing.

The printing was done by Systemset of Letchworth. A successful test run, followed by the printing of over 16,000 sheets, was completed in about ten days. The sheets arrived at Sussex already collated (though not stapled). One further list, a very selective one of titles received regularly by the Documents Section (but excluding titles supplied on some standing orders, e g. the HMSO Selective Subscriptions Service), was typed and photocopied within the library The Appendix shows an example of a list sent to individual voters.

Nearly all the lists were sent to internal addresses, but the Salaries Office had sent us a list of staff on leave, and their envelopes were marked 'Please forward'. Our reward for this extra effort was that lists were returned from France, Belgium and California.

Before the despatch of the envelopes towards the end of January, the campus population had been told of the imminent review by meetings, letters and a notice in the University *Bulletin*. However, the covering letter sent with 'voting papers' gave more detailed instructions. Voters were allowed 100 votes each, to allocate as they wished to titles of interest to themselves (and their students if applicable), whether or not the library currently received those titles. This method of using votes, we hoped, allowed voters sufficient scope

- to record some sort of interest in as many titles as any one individual might reasonably be able to read or consult fairly frequently;
- to express differing levels of support for different titles by allocating points on a sliding scale;
- to make suggestions for extra titles, together with their level of support for them.

Voters were asked to record their votes on the printed list against each chosen title, to write in extra titles at the end (with their votes), and to print their names on each list. 'Extra titles' to be written in included both titles not already taken by the library, and those received but not included on a specific voter's lists. If voters wished to receive other subject lists also, they could ask the library for them Library staff were asked to vote with regard to their functional responsibilities and not from the point of view of the subject groups for which they were responsible

During the eight weeks allowed for voting, interlinked files were set up on the Geac to record voters, titles and votes, and a series of programs were written for the recording and analysis of returns (*see* Tables 1 and 2). Some files could be set up by program from Library or Student Records files; in others the data had to be typed in.

TABLE 1. *Current titles (November 1984) administered by the Periodicals Section.*

	Purchases	*Gifts*	*Total*
Generalia/Bibliography/Reference	266	71	337
Arts	335	27	362
Social Sciences	525	83	608
Sciences	1025	48	1073
Totals	2151	229	2380

The cost of these came to about £185,000 for 1983/4. Another 1,750 titles were administered by the Documents Section: selected ones were included in the review.

TABLE 2. *Voters on the original voters file.*

Voters status		*Source of data: method of entry*
Staff· —academic	429	Lists from Salaries Office: typing
—research	250	Lists from Research Units. typing
—other (mainly library)	35	Lists from Salaries Office. typing
D.Phil students: —normal	267	Magnetic tape from Student Records: program
—continuation	50	Library computer files. program
All voters	1,031	

First responses

The reaction was rather as we expected. The Deputy Librarian received a fairly substantial correspondence on the general principle of the review, much of it from staff concerned that the method would be unfair to their interests. Much of this concern was mutually contradictory; much came from predictable sources, and most of it was laid to rest by a series of diplomatic replies emphasising, *inter alia,* that the results produced by the computer would be scrutinised carefully to take into account the special circumstances mentioned. However, the one cause of discontent which rumbled on was the inclusion of D.Phils. Some academics felt that D.Phil. votes should count for less than their own, some felt that they should not have been included at all, some demanded that M. Phils. should also be sent papers.

We were quite unprepared for the volume of requests for supplementary lists, usually generated because we had had insufficiently detailed information as to research or teaching interests We also had requests from some new voters and others who had heard of the review from existing recipients of lists.

When the voting papers began to be returned it seemed, mostly, that we had made clear what we wanted, but several peculiarities showed themselves. One was that several people could not add up to 100 (including at least one mathematician, and a chemist who cast 260 votes). In such cases, we reduced the total to 100 by lowering the votes allocated to the titles most heavily supported by that voter, or reducing the number of votes on titles we knew were popular, or both.

Several other instructions could have been added to make the checking of returns easier – for instance to use figures to record the votes (not ticks or other symbols which some voters used – sometimes in long lines!). Perhaps surprisingly, almost everyone did write their names on the lists (though some were hard to decipher), and no-one complained about lack of anonymity.

Recording the votes

In preparation for the entering and analysis of returns, lists were printed of voters and titles, to both of which new entries could be added as necessary. As each set of lists was returned, the voter's entry in the printed list of voters was ticked, and the voter's number from that list was written on each subject list. Over-voting was dealt with at this stage and 'written-in' titles checked. If these were discovered to be existing subscriptions, the serial number was written in on the voting paper; if they were new suggestions, they were checked in various publications for accuracy, and a manual file was compiled for reference later on.

The entering of each voter's returns onto the computer files was effected by typing in the relevant serial numbers and the number of votes cast for each title. New titles were allocated a serial number by the program when the command for adding a title was typed. The title itself was typed, together with the number of votes cast. The title, and its serial number, were then written into the printed list of titles, so that if another voter suggested the same title, the serial number already allocated could be used.

Almost all the inputting consisted of numeric characters, so was prone to error. Mistakes spotted immediately were noted; others were found from proof-reading prints. All were corrected directly on the files, using a utility program, also prone to error and laborious. However, we decided that, overall, this method was less complicated than writing routines to allow correction via the inputting program. We also hoped, justifiably, that there would be relatively few such errors.

As the time allowed for the return of papers passed, reminders were sent, which increased the flow of completed papers, and also produced some extra requests for lists. At the closing date (end of the Spring term), the size of the voters file had increased by 26, all members of staff. The size of the title file had increased by 355, 8.5% up on the library's total subscription list, and, more startlingly, 14.3% up on the number of titles used for the review.

One aim of the review had been to encourage voters to reply solely on behalf of themselves and their students, and to discourage 'tactical voting'. We were not wholly successful here. Some behaviour of this type was obvious from the voting papers, and we also learnt informally of more instances. The mathematicians apparently asked a statistician among their number to advise them! The majority of a large social sciences subject group (about a dozen people) insisted on submitting a single return, but some further correspondence did enable us to adapt the pre-inputting procedures to allow us to apportion the titles among the group. On the whole, we could do little to detect tactical voting at this stage, but were able to take some occurrences of it into account later when interpreting the results. For example, we later discovered that many members of one large science school had sought to increase the impact of their votes by circulating lists which instructed their 'junior constituents' (especially postgraduates) how to vote.

Some voting papers were accompanied by memos of varying length and content, some actually qualifying votes cast and many needing interpretation. All received individual replies.

TABLE 3. *Response rates from voters.*

Voters. status	*Contacted*	*Voted*	*%*	*Did not vote*	*%*
Staff: —academic	444	290	65.3	154	34.7
—research	260	108	41.5	152	58.5
—other (mainly library)	36	33	91.7	3	8.3
D.Phil. students	317	53	16.7	264	83.3
All voters	1,057	484	45.8	573	54.2

The figure for academic staff was good; that for research staff quite acceptable, since many of them are on short-term, temporary contracts and do not in fact use the library much anyway. The main disappointment was the figure for D.Phils.

TABLE 4. *Response rates for titles*

Titles: type	*Total*	*Voted for*	*%*	*Not voted for*	*%*
Currently received	2,502	2,236	89.4	266	10.6
Suggestions for new subscriptions	355	355	100.0	0	0.0
All titles	2,857	2,591	90.7	266	9.3

Investigation of the current titles which received no votes showed that 40% of them (about 4.3% of the whole) were gifts or came on a joint subscription, another part of which had, with one exception, attracted votes.

Analysis of the returns

More programs were meanwhile written and tested, to allow the results to be analysed. We had tried to predict the possible permutations of information we might wish to have available when considering what changes to make to the subscription list; in practice we used only a handful of them.

We realised, as time progressed and the pound began to recover, that the review could indeed be one of rebalancing and not one of cancellation. During the Easter vacation, therefore, we considered the existing subscriptions which had attracted few or no votes, and the suggestions for new titles which had received most. This entailed an intensive series of almost daily meetings of the working group, which considered initially the titles not voted for at all, discussing each one individually. Gifts and indivisible joint subscriptions were ignored Most other titles not voted for were seen as candidates for cancellation, but several were reprieved as a result of the joint personal knowledge of the group.

A similar procedure was followed for titles attracting only one or two votes, or voted for by only one or two voters. Here, we were even more cautious, since some people had voted for 100 titles with one vote each, and others for one title with 100 votes. In practice, nothing was proposed for cancellation which had attracted more than three votes in total, from one or two voters We did consider more heavily supported titles, but found ourselves rejecting virtually every one. The lists of proposed cancellations were circulated to other members of library staff, and some further reprieves resulted.

The University library is not the only substantial library in the area. Where we were doubtful about proposing the cancellation of a lightly supported title, its presence in other local libraries was often a decisive factor in swaying us towards proposing cancellation.

The titles thus proposed for cancellation released a total of some £7,000 for new subscriptions – the 'written-in' titles, as they came to be called. To take sensible decisions regarding the new titles we needed to know their current prices, which Blackwell's, our major agent, supplied. The total value of the titles for which a price was quoted was £42,000 plus per annum, so it was obvious that we would have to pick the new subscriptions very carefully.

Lists of the titles were therefore produced according to three criteria: the number of votes cast, the number of voters, and the average number of votes per voter, and we concentrated on titles near the top of more than one of the lists. Now we were able to take into account the more obvious examples of 'tactical voting', and it was at this point, too, that we were able to carry out the rebalancing of resources which was now the major objective of the review.

Copies of lists, to be sent to everyone on the voters' lists, were produced, together with a covering letter from the Librarian, and these were presented at a meeting of subject librarians. The lists were of titles proposed for cancellation, those proposed for new subscriptions, and deferred requests (a very long list).

The covering letter allowed four weeks for the receipt of comments on the lists, including reasoned requests for reprieve from proposed cancellations, increased strength of support for deferred requests for new subscriptions, and additional support for agreed new subscriptions from those who had not formally voted for them earlier. A copy was sent to everyone on the list of voters, whether or not they had voted.

We now began to feel more hopeful about the outcome of the review. We had managed to keep to our timetable, and the end of the project was in sight. We were further encouraged by the responses to the lists. There were, of course, requests for more favourable treatment, whether of titles proposed for cancellation or of deferred requests, but the tone of comments received was noticeably reasonable, and there were even compliments. 'Well done the periodicals review' from a known malcontent was praise indeed. The consolidated list of amendments and lists of proposed changes were distributed and displayed widely from the final week of the Summer term, our original deadline.

The final tally of changes was a total of 164 cancellations, and 74 new subscriptions, of virtually equal cost. This was about 3.8% of that year's budget, and also an indication of the switch of resources from cheaper humanities journals to more expensive science ones.

The sending of cancellations and new orders to the relevant suppliers concluded the immediate tasks connected with effecting the changes, but it had become clear that many of the coded subject allocations already made for each title would need change. The subject allocations, as recorded in the database, were amended to reflect changes of interest in about one third of the titles involved. Finally, records for the new subscriptions had to be created for the manual visible index and the online catalogue, and those for the cancellations amended, together with all the other concomitant tasks.

Conclusions

It must be obvious from this description that certain factors were of great help. There was the commitment from colleagues of substantial amounts of library staff time. Machine-readable cost and subject data for relevant titles had been developed over many years. There was sufficient in-house systems expertise to establish the special files and programs. (The programmer had previously been a Head of Periodicals).

The review enabled us to accomplish virtually all we hoped In addition we have since found a variety of unexpected further uses for the resulting data. The interdisciplinarity of research and teaching as reflected in voting patterns has been examined, and we have also used these findings to defend or question existing levels of periodicals provision for specific subject areas. Where sole supporters of specific titles have resigned, we have been able to cancel those titles. With regard to bibliographic sources available online, we are able to assess the scope for substituting free online searches for the hard-copy subscription, or to assess the market for publicising the availability of an online database. We can decide that some gifts need no longer be processed or retained; others need to be replaced by a subscription if they stop coming free.

Initial responses to the review varied from the cautious to the hostile, with one notable exception — a member of academic staff who asserted that every voter should be sent a copy of the entire list of current subscriptions, and that the whole review should be repeated annually! However, almost all the reservations were overcome, and reactions to the final lists were, as described, noticeably reasonable, and, in some cases, actually enthusiastic. It seems very likely that a rebalancing of resources on the scale on which we were able to accomplish it would have been politically impossible without such a review. We believe, therefore, that the results justified the necessarily substantial amount of work involved. No money has been saved, but the amended list of subscriptions should lead to more relevant periodicals provision in the context of current teaching and research at Sussex. We would be prepared to do it again.

Postscript

This paper is necessarily a brief summary of the work involved in the review. A more detailed account has been provided to several libraries which had heard of our methods on the grapevine (one of these has already had a review, achieving a better response rate than ours!), and is available on request.

REFERENCES

1. YOUNG, R.C. *et al.* Geac with local enhancements: the integrated real-time system at the University of Sussex Library. *Program,* 1986, **20**, pp.1–25.
2. LAMBERT, P.J. Periodicals automation at the University of Sussex. *UKSG newsletter,* 1986, **8**, pp.15–18.

APPENDIX

SPPR73 11-01-85 University of Sussex Library Page 1
Periodicals titles of primary interest to Astronomy

Classification	Titles etc.	Cost in pounds. 1983	1984	1985	(Lib. use)
Q 2070 Air	Air almanac *** RECEIVED ON HMSO STANDING ORDER	0.00	0.00	0.00	6610
Q 2070 Nau	Nautical almanac *** RECEIVED ON HMSO STANDING ORDER	0.00	0.00	0.00	6981
QB 1 Act	Acta astronomica	12.00	22.00	22.00	0039
QB 1 Ann	Annual review of astronomy and astrophysics	17.85	33.50	41.90	0441
QB 1 Ast	Astronomical journal	74.43	88.67	103.05	0575
QB 1 Ast	Astronomy and astrophysics	502.00	555.00	534.00	0578
QB 1 Ast	Astronomy and astrophysics. Supplement series	136.20	148.60	161.00	0579
QB 1 Ast	Astrophysical journal *** Incl. sub. to supplement series	261.43	309.47	365.30	0581
QB 1 Ast	Astrophysical journal. Supplement series *** Incl. in sub. to Astrophysical journal	0.00	0.00	0.00	0582
QB 1 Ast	Astrophysical letters	0.00	0.00	0.00	0583
QB 1 Ast	Astrophysics and space science	471.34	570.78	629.45	0584
QB 1 Ica	Icarus	282.45	337.25	366.50	2401
QB 1 Mer	Mercury *** Incl. in sub. to Publications of the Astron. Soc. of the Pacific	0.00	0.00	0.00	3396
QB 1 Obs	Observatory	9.50	10.80	15.50	3791
QB 1 Pub	Publications of the Astronomical Society of Japan	56.98	65.76	76.90	4248
QB 1 Pub	Publications of the Astronomical Society of the Pacific *** Incl. sub. to Mercury	33.92	44.66	53.60	4249
[etc]........					
QB 4.G85	Royal Observatory annals *** RECEIVED AS A GIFT	0.00	0 00	0.00	4553
QB 8.G6	Astronomical almanac *** RECEIVED ON HMSO STANDING ORDER	0.00	0.00	0.00	6588
QB 8.G79	Star almanac for land surveyors for the year *** RECEIVED ON HMSO STANDING ORDER	0.00	0.00	0.00	6778
QB 12 Ast	Astronomical phenomena for the year... *** RECEIVED ON HMSO STANDING ORDER	0.00	0.00	0.00	7592
QC 801 Geo	Geophysical and astrophysical fluid dynamics	612.00	692.00	0.00	2131
QC 801 Mon	Monthly notices of the Royal Astronomical Society *** Incl. sub. to Memoirs of the Royal Astronomical Society	345.00	425.00	450.00	3518
QC 801 Pla	Planetary and space science	180.00	180.00	229.00	3986
	Number of titles 32 Total costs	3421.51	3911.87	3587.10	

P.T.O.

Excellence under the microscope

Blaise Cronin and Mairi Gudim

Strathclyde Business School, Department of Information Science

This review was prepared as part of a British Library R&D-funded project on innovation in the information services sector.

In recent years there has been a rash of text books and articles addressing the complex theme of organisational excellence. Successful organisations have come under the microscope as never before, and their structures, philosophies, strategies and leaders analysed to the point of near exhaustion. Corporate excellence has, it would appear, become the Holy Grail of contemporary management theory and practice.

Corporate excellence

Excellent organisations, according to this literature, exhibit a number of distinguishing features which relate to such factors as managerial style, organisational structure, customer-orientation, technology assimilation, organisational climate, corporate culture and innovation-consciousness. Corporate excellence remains, however, a vague and generalised term which is perhaps less amenable to dissection than some authors would allow.

What constitutes success?

Success can be defined in a variety of ways; it need not be (and often is not) synonymous with a healthy bottom line. Likewise excellence – corporate excellence is relative (standards and definitions may change) and almost always variable (excellence today is no guarantee of excellence tomorrow).

Goldsmith and Clutterbuck[1] used three criteria of success in their analysis of twenty-three companies: high growth in assets and profits over a ten year span, a consistent reputation in industry as a leading company, and finally, a solid public reputation. In assessing corporate excellence, they surveyed successful and not-so-successful companies, gathered and analysed a large amount of data, and interviewed key personnel in an effort to expose the common denominators. The shared characteristics they labelled: leadership, autonomy, control, the involvement factor, market orientation, zero-basing, the innovation factor and the integrity factor.

Kanter[2], in a scholarly analysis of corporate change-makers, used a variety of investigative techniques and performance indicators to uncover the discriminating variables. Her recommendations to would-be excellent companies

Aslib Proceedings 39 (1) January 1987 p 17–31 Printed in Great Britain

include the encouragement of a culture of pride, access to power tools for innovative problem-solving, elimination of unnecessary layers of hierarchy, and early and full information about company plans and policy.

Peters (first with Waterman[3], then Austin[4]) 'dived' into the life of a carefully selected sample of successful corporations to uncover the propellants of innovation and excellence. Their short-list was based upon a detailed analysis of long-term financial performance. From this group a refined sample of corporations with a track record of innovation (i.e. 'a continuous flow of industry bellwether products and services and general rapidness of response to changing markets and other external dynamics') was generated.

Lessem, by way of contrast, concentrated his analyses on a mini sample of four particularly successful UK companies[5]. He employed a more discursive, leader-focused approach to support his thesis that excellence is acquired cumulatively as an organisation evolves through its three stages of growth – pioneering, expansive and integrative.

The common message is that excellence means more than posting hefty pre-tax profit returns. It entails an almost obsessive commitment to product quality and customer satisfaction, and a sustained championing of innovation. Peters and Waterman summarize their findings as follows:

> 'The excellent companies were, above all, brilliant on the basics. Tools didn't substitute for thinking; intellect didn't overpower wisdom; analysis didn't impede action. Rather, these companies worked hard to keep things simple in a complex world. They persisted. They insisted on top quality. They fawned on their customers. They listened to their employees and treated them like adults. They allowed their innovative products and service ''champions'' long tethers. They allowed some chaos in return for quick action and regular experimentation.'

How, then, is such excellence to be achieved by those who have not quite got the hang of things? Can excellence be aped, taught or lifted straight out of the manager's conceptual kitbag?

Managerial style

One of the major variables in the mix is managerial style. Peters and Waterman[3] and Peters and Austin[4] have made extensive use of the catchphrase 'management by walking around' (MBWA). MBWA implies that the 'boss' (and senior members of staff) are as familiar with the shop floor as with the boardroom, and that they mingle with staff at all levels in the organisational hierarchy, motivating and inspiring employees to greater heights with an encouraging word here, and a pat on the back there.

Keeping an ear to the ground (what they term 'naive listening') may seem like time wasted, but it can be a most effective form of front-line intelligence gathering. The chief executive officer/managing director who spends most of his time cocooned in the board room, office, international hotel, convention centre or forward quarters of a Jumbo jet is arguably not doing his job properly.

In *The Roots of Excellence* Lessem turns the spotlight on four highly visible and successful, front-line managers/innovators. The personal charisma of Steve Shirley of F International and of Terence Conran of Habitat/Mothercare are cited. John Harvey-Jones of ICI is described as being at the centre of his organisation rather than at the top of a hierarchical pyramid, and is quoted as wanting ICI to be a collaborative rather than an authoritarian company. Managerial style aspires to be relaxed but dynamic. Participation, involvement and commitment from employees at all levels (from shopfloor to boardroom) is encouraged.

Goldsmith and Clutterbuck have coined the phrase 'management by huddle' to suggest the idea of managers being in close touch with one another (e.g. open plan offices – an approach used by Amstrad) so that as opportunities and problems arise, they can form a huddle and quickly decide upon the appropriate course of action. In so-called excellent companies, *ad hoc* conferencing and brainstorming sessions will occur at the 'drop of a hat'. Indeed, many successful organisations exploit 'forcing devices' to encourage synergy, cross-talk and skills-pooling.

Structure: flat and organic

Clearly this style of 'involved' management requires a supportive organisational environment. If the organisation's hierarchy is rigid and bureaucratic, with each member of staff adhering to a strictly-defined task, then the notion of senior members of management crossing hierarchical lines to gather suggestions from peers and underlings is unlikely to take effect.

Similarly, if the organisation's functions (e.g. the finance, marketing and production departments) are segregated (separate islands of influence and autonomy), with titular directors meeting but occasionally in formalised fashion, there is little chance of cross-fertilisation occurring; little chance of integrated planning and action becoming a reality.

Segmentalism (what Kanter refers to as the factoring of problems into sub-problems) is the hallmark of low-performing, innovation-averse organisations. In her view, the entrepreneurial spirit which fosters innovation calls for an integrative or holistic approach to planning and problem solving:

> 'To see problems integratively is to see them as wholes, related to larger wholes, and thus challenging established practices – rather than walling off a piece of experience and preventing it from being touched or affected by any new experiences.'

Musmann[6] suggests that for any organisation trying to survive in a dynamic environment, a decentralised, non-bureaucratic structure is best. Bingham[7] quotes structural characteristics such as size, and degree of centralisation/decentralisation as being important determinants of the rate of adoption of innovations.

New organisational structures are required to cope with high technology industries. Traditional line authority, should be replaced by an approach in which structure is flexible, relationships fluid, accomplishments often non-routine and change-oriented. Tricker and Boland[8] suggest that there is no one best theory of organisation and that what must be developed is a contingency-based model which relates the main aspects of the organisation's environments and technologies to more successful/less successful ways of organising.

They suggest a decision-making or systems approach as an alternative to the classical and behavioural models of organisational dynamics. In the former, the organisation's structure is seen as a mechanism for reducing uncertainty with regard to technology and the external environment. An organisation should seek to deal with technological and environmental complexity and multiple, conflicting goals by a process of sequential goal/problem resolution. This will require a matrix structure (also recommended by Kanter) in which project task forces (i.e. multidisciplinary teams formed to achieve specific goals) are overlaid on a functional structure Employees thus have two dimensions to their jobs, namely a functional speciality plus responsibility to a particular market area or problem domain. Such a structure, say Tricker and Boland is particularly appropriate for high technology corporations.

From the above it would appear that the excellent corporation will have a structure which encourages cross-functional linkages, which is decentralised (so that employees do not feel powerless to take responsibility for their own actions), and avoids excessive bureaucracy. The well-known works of Woodward[9] and Burns and Stalker[10] underscore the importance of the type of technology used by an organisation as a determinant of its structure. In an assembly, line-driven production environment, involving highly routinised procedures, an essentially bureaucratic structure may well be appropriate. If a company manufactures a small number of more complex products, the production of which requires a high level of communication amongst the organisation's various functions, a flatter, 'organic' structure may well be more appropriate: fewer levels in the hierarchy makes for faster, more effective communication flows, both formal and informal.

Organisational conflict

A model of organisational structure which advocates 'flatness' and flexible inter/intra-departmental communication must also recognise the possibilities of conflict arising from the inevitable differences in functional priorities across departmental lines. Kanter and Tricker and Boland would suggest that a company copes with conflict and structural constraints by the intelligent exploitation of matrix structures, in which, for example, a classic production hierarchy co-exists with an 'organic' administrative torso. In itself, a matrix-management approach will not necessarily eliminate the potential for internal conflict. However, Kanter and Tricker and Boland would view a degree of conflict as functional, inasmuch as it will contribute to a dynamic organisational climate which, ultimately, is conducive to innovation.

Importance of people

An organisation's attitude to both its personnel and customers is a key determinant of excellence Kanter, Goldsmith and Clutterbuck, Peters and

Waterman, Peters and Austin, Lessem and others emphasise the importance of a fundamental sensitivity to people as people. Creating a feeling of belongingness and 'ownership' among staff is a *sine qua non* of excellence, as is a strong customer-orientation

Care, consideration, love, concern and praise are terms which pepper chapters on staff and customers in the new wave management literature. Peters and Austin speak of customer support people being showered with attention . . . of customer-keeping augmentations. For them, the litmus test of excellence is the question: 'Does your company smell of customers?'

They also stress the importance of supportive management, such as praise for employee innovations, however humble. Above all, failure must be tolerated, and staff encouraged to try again with the next idea. Kanter mentions the importance of encouraging 'a culture of pride' for employees, so that they may give of their best in order to produce quality products. Peters and Austin stress the necessity of high-quality staff training, which not only develops appropriate competencies, but also helps engender the sense of being an integral part of the company concerned – of identifying (positively) with the prevailing corporate culture.

Lessem, writing of Habitat, 'was struck by the emphasis on wholeness, an interrelationship, and upon integration – across functions and between people'. He adds:

> 'Every time I walk into Habitat/Mothercare's HQ in the Heal's building, I am struck by the degree of individuality that is seemingly encouraged. Staff are dressed in jeans, in sportswear. in casual suits and in formal dress. Men and women work together in an atmosphere of free expression that belies the normal, established corporate environment. The open plan offices stimulate open communication and regular interaction.'

Employees are to be allowed autonomy (not tied to one particular role) to enable them to develop their creative instincts. Goldstein[11] coined the term 'goldcollar workers' to describe contemporary high achievers whose jobs call for a high degree of creativity and/or special skills. This elite, he maintains, will demand autonomy within the organisational framework of the future. They are individuals who do not want to be deflected from their purpose by the distractions of company politics or suffocated by paperwork and regulations. It is the creative potential of this elite which will be critical in the effort to maintain and develop competitive advantage. A tolerant organisational structure will be essential to retain and optimise their free-wheeling talents

Lessem describes the flexible recruitment policies of F International which has a tradition of employing part-time home workers – usually women. By allowing talented individuals to work from home, by making a virtue of what other organisations would see as a handicap, the company has nurtured a dedicated and adaptive workforce, which has enabled it to position itself successfully in a competitive service market place

Care of the customer

Many of the authors cited thus far stress the need for well-niched, quality products and good customer relations. Examples are given of how successful companies have gone far beyond what was expected of them in order to fulfil customers' requirements. IBM is instanced as an organisation which produces a quality product for which the customer will pay above the market minimum because of the company's reputation for reliability and excellent after-sales service.

The message is clear: if the product and backup are good, the customer will happily pay the asking price. Peters and Austin support this view by quoting findings from the *Product Impact of Marketing Strategies (PIMS)* database. This database deduces a relative perceived product-quality 'score' by means of a complex procedure that ranks the importance to the customer of various quality and service delivery traits. The *PIMS* data seem to suggest that product quality is more closely associated with financial performance than market share

According to Lessem, Habitat has succeeded as a company not only because it makes well-designed furniture and textiles available in large volume, but also because, in contrast to traditional retail practice in the home furnishing sector, it uses the supermarket approach of making the goods available on the shelves: 'the stocky warehouse feel was very attractive to the customers. We provided an exciting environment for them', says Sir Terence Conran. Consideration for the customer in the fulfillment of a real market need contributes to retailing success.

Importance of IT

Several of the companies cited for their excellence (e.g. IBM, Hewlett Packard, F International, Texas Instruments, Amdahl, Digital Equipment) are centrally involved in designing, producing and marketing computer hardware and/or software. Others, though not engaged in the production/development of information and communications technologies, make extensive use of IT in their operations. IT thus features strongly (overtly and covertly) in most analyses of corporate excellence.

A 1984 report for the Institute of Administrative Management and the Department of Trade and Industry[12] states that companies in the UK are falling behind in their exploitation of information technology. A multi-sectoral survey of small, medium and large companies concluded that organisations which lag in the use of information technology are six times more likely to have a poor financial performance within their sector than leading adopters. The slow pace of assimilation is attributed to lack of interest and commitment at senior management level and a reluctance to treat information technology-related investments on a par with other capital investment decisions.

The extent to which an organisation will utilise information technology depends on a range of factors, such as the goods and services produced, its size and the availability and cost of the appropriate hardware. Nevertheless, the report's findings showed starkly that superior performance and sustained competitive edge were closely linked to an organisation's ability to ingest and exploit state-of-the-art technology. Excellent corporations are competitive and (almost) by definition keep abreast of technological trends and look for novel ways in which to translate technological advances into improved business strategy.

At the macro level, Rothwell and Zegveld[13] point out that a nation does not gain competitive advantage from technology *per se,* but rather from the ability of individual companies to convert technological advantage into marketable goods – a view supported by Pavitt's[14] study of the relationship between technology and competitiveness in international markets.

Clive Sinclair is an example (albeit a quixotic one) of an 'innovator star' who combined technological inventiveness with market opportunism. His mass-produced, low-cost microcomputer created a global market where one had not previously existed. Steve Jobs (founder of Apple) is another example of the inventor, turned innovator, turned entrepreneur in a hi-tech market. However, the fragility of the founding innovator is underscored in the careers of both Jobs and Sinclair: Jobs was ousted from Apple and Sinclair bought out for a mere £5M by Amstrad in 1986.

Corporate culture

Corporate culture can be defined as the existence of a shared value set among employees. It is an expression of 'belongingness' and collective purpose. The vogue for emphasising a company's 'feel' or 'atmosphere' is rooted, according to Thackray[15], 'in the simple but dubious notion that a corporate culture not only exists but that top management can do something to affect positively its strength, direction, values, myths, symbols, language, mores etc'.

Litwin and Stringer[16] describe organisational climate or culture as 'a set of measureable properties of the work environment perceived directly or indirectly by the people who work in this environment, and assumed to influence their motivation and behaviour'.

They quote Lewin's 1930s research which suggested that organisational climate was more powerful than previously acquired behaviours, and could change the observable behaviour patterns of employees. Organisational culture (or climate) should perhaps be viewed as an intervening variable, mediating between factors of the organisation system and the motivations of its members.

Litwin and Stringer's research has attempted to measure organisational climate – to apply scalar discipline to fuzzy impressions and feelings. They also conducted experiments to discover to what extent leadership style might affect a company's culture, from which they concluded that leadership was indeed an important variable in the creation of a distinct corporate culture.

Lessem notes the importance of the Habitat/Mothercare culture, social fabric or 'style', which he attributes to Terence Conran's emphasis on good design, well-stocked 'warehouses' and staff expressions of individualism. Generalising, he argues that a company's culture is (initially, at least) often linked with the founder, but concedes that as it expands and matures it may gain a separate cultural identity.

The idea of cultural evolution is tied to Lessem's central tenet that organisations typically work through three stages – a tree of business life. The three stages in cultural maturation he calls the 'personal identity stage', the 'cultural identity stage' and the 'universal identity stage'. Three companies which represent each of these are Sinclair Research, Habitat/Mothercare and ICI, respectively. It is questionable whether these three stages of business life can be separated quite so clinically, but the concept of corporate culture is obviously useful in the analysis of organisational structure and dynamics

Attitudes to innovation

The term 'innovation' is often used incorrectly. According to Sadlow[25] it is a repeat process: 'Most people think this word means the introduction of a new idea or invention. Actually, the word comes from the Latin noun innovatus, which means to renew, or make again'. For Drucker[17] innovation means the creation of new value and new satisfaction for the customer.

Excellent corporations as a rule exhibit a positive attitude to innovation, but this does not mean that a company will be searching constantly for 'the new'. One of the main conclusions from both *In search of excellence* and its UK counterpart, *The winning streak* is that successful companies should 'stick to the knitting' – do, in other words, what they are best at doing . . . stay reasonably close to businesses they know and avoid whimsical or inappropriate diversification.

Innovation can be applied to existing routines, processes, activities, products and service delivery mechanisms. In fact, Kanter makes the point that in resource-lean times, there still can be innovation, but that the focus shifts from product innovation to managerial and organisational practice She found that innovative corporations had an integrative approach to problem-solving and recognised that innovation was a mainstream rather than countercultural activity She further observed that middle management level functioned as a marketplace where innovatory practices occurred and in which power circulated, guided by a hierarchy above and serviced by a hierarchy below.

Peters and Austin see innovation being encouraged by corporate leadership which acts as a liberator of, rather than constraint on, natural talent. They go on to say that recent organisational theorists emphasised the reduction of organisational conflict, but that today there is increasing acceptance of the view that conflict can be beneficial in keeping the organisation alive and innovative. out of discord and disagreements, new operating methods and practices may be born.

Rogers'[18] study of the diffusion of innovations enumerates many possible inhibitors of successful innovation. In particular, he emphasises the importance of understanding the 'culture' of the market-place into which a new service or product is to be launched. He is not alone in recognising the depressive effect of over-formalised organisational structures and the positive nature of interconnectedness among an organisation's various sub-units.

He believes that a degree of organisational slack is useful ('zones of indifference', to use Kanter's terminology[2]. In practice, this means that experimentation is encouraged and failure tolerated as part of the learning process. Kanter makes the point that some organizations will go so far as to provide venture capital for the specific purpose of allowing employees to incubate novel ideas without impinging on the financial mainstream of the company Volkswagen is an example of a company which provides a 'playroom' for engineers wanting to try out ideas[19]

Fostering innovation

A great deal has been written about the importance of encouraging innovation; of creating the conditions necessary to foster creativity and imagination within organisations. In cases where support for innovation champions is not formalised it is not uncommon to come across 'skunk works' (groups of intrapreneurs) struggling to 'bootleg' unapproved projects in the face of corporate opposition. These marginals/visionaries may in some respects 'buck the system', but it is widely accepted that their existence should not only be tacitly accepted, but encouraged, and limited access to corporate resources provided to support their heuristic passions.

In an analysis of 73 successful innovations in 39 Western European companies, Berth[20] found that the majority were not byproducts of so-called classical planning (start with the market and work back to the product), but that the product had been conceived in advance of any market analysis Berth also pointed to the inadequacy of business schools and other educational establishments in providing appropriate training in the art of creative thinking. However, like Goldstein, he concedes that identifying potential innovators is not an easy task Historically, personnel managers have been trained as 'thinkers', and their natural tendency has been to recruit in their own image – 'thinkers' like themselves, rather than 'doers'.

Identifying the 'doers' or potential innovators is a problem. Taylor and Holland[21] point out that mere mastery of knowledge is insufficient to guarantee creative performance, and that most studies of creative people show the centrality of particular personality traits – e.g. independence, originality and adaptive flexibility They suggest further that levels of expressed creativity can be modified, either positively or negatively, by environmental influences.

Criteria for creativity

One of the main problems in assessing creative potential is that of deciding what criteria to use. Taylor and Holland's work suggests that the effects of potentially relevant variables such as age, amount and type of education and work experience have not always been studied or controlled, and that too much emphasis has been placed on high-level aptitude tests, which are only moderately successful in predicting creativity. They recommend the Remote Associative Test (RAT) as a device of promise.

The test was developed by Mednick and Mednick[22] to measure the ability to think creatively. The creative process is defined as 'the forming of associative elements into new combinations which either meet specified requirements or are in some way useful. The more mutually remote the elements of the new combinations, the more creative the process or solution'. The test involves linking three different words per group by means of one associative term, and is founded on the basis of expecting highly creative people to have richer associative lives than less creative people. The former can produce a greater number of associations to a wide variety of stimuli. Although those who scored highly on Mednick and Mednick's test tended also to have high IQ scores, there was no direct correlation, which again supports the notion that when a company is trying to recruit potential innovators, selection on the basis of academic attainment may well prove inadequate.

Mednick and Mednick's definition of creativity is echoed by Shapero[23], who defines creativity as 'the ability to call up and make new and useful combinations out of divergent bits of stored information'. He describes creative individuals as being non-conformists who have little reverence for authority or procedures, and suggests that organisational creativity can be increased through a deliberate hiring policy, through motivating personnel via incentives that reward creative output and encourage risk-taking, through ensuring that the necessary resources are available, through the provision of organisational mechanisms to ensure that new ideas are not rejected for the wrong reasons, and finally through good managerial practice whereby managers do not intrude upon the operating details of an innovatory project.

Although Shapero's guidelines for encouraging creativity make sound sense, there remains the matter of finding creative employees in the first place, and persuading companies to change their policies and structures to accommodate such individuals. According to Botkin *et al*[24], new educational priorities are required, if talent is to be liberated at an earlier stage in the developmental process. They cite the problem in the US of attracting good students onto academic courses which do not lead to high-salaried careers, and the resultant deflection of natural talent from certain social priority areas due to disparities in remuneration and reward structures.

They go on to propose the creation of an agency concerned with the role of new technologies as catalysts for economic development and argue that there is an urgent need to accelerate and improve the transfer of technology to the market-place. Sadlow[25] also stresses the importance of education, and suggests that respect for innovation should be ingrained in the corporate culture, with management at all levels prepared to take responsibility for ensuring that innovatory ideas take root and flourish.

What, then, can be done to improve corporate innovativeness? First, recruitment and selection practices need to become more focused, which in turn requires an improved knowledge of the psychodynamics of creativity and entrepreneurship. Second, organisational changes are needed, e.g. looser, more supportive frameworks/structures; guaranteed autonomy of action; incentives for risk-taking; venture/'playroom' facilities; access to corporate resources; follow-through mechanisms for embryo innovations; appropriate reward mechanisms. Third, government policies are needed to encourage technological innovation and advancement through imaginatively funded R & D programmes and to facilitate the establishment of creativity-nurturing education and training programmes at all levels.

Non-management variables

In a critique of *In Search of Excellence* Midwinter[26] argues that Peters and Waterman's research evidence is presented in such a way that it is impossible to conclude that the cited companies' successes are due solely to the management systems and styles used. In his view, non-management variables can contribute to an organisation's success or lack of it. For example, a company's location will affect the availability or otherwise of a skilled workforce.

Similarly, employee motivation is more likely to be high in the information/service industries sector which is experiencing growth (and from which a disproportionately high number of Peters and Waterman's examples come), than in the industrial/manufacturing sector. This is not to suggest that it is impossible for large, bureaucratically structured companies to display excellence, merely to suggest that the path to recognition may be considerably tougher for them than for a small start-up company in a high-tech, growth sector.

Avoidance of conflict

Midwinter further suggests that Peters and Waterman do not properly explain how the cited firms manage or resolve the inevitable conflicts which arise in loose, de-bureaucraticised, flat, organic organisational environments. Although conflict may act as a catalyst for innovation and change, it can equally prove to be counterproductive in terms of wasted time and energy (and therefore money).

Kanter maintains that when an organisation is studied it is better to highlight exemplars (i.e. successful innovations) rather than trouble spots or failures. It is, of course, useful to look positively at the successful changes, but the problematic areas cannot be glossed over. There will always be members of the organisation who have vested interests in conflict with stated corporate aims. It seems naive in the extreme to assume that a 'gold star' award for work well done will eliminate all such conflicts.

Charisma

It is hard to disagree with the notion that a relaxed but dynamic managerial style coupled with a flat organic structure is more conducive to innovation and creativity than authoritarian leadership and bureaucracy. It is equally difficult, however, to imagine how many large, traditionally structured corporations could change overnight the practices of many years standing. What works for Silicon Valley may not be appropriate to Detroit. Nevertheless, many of the focal companies (whether young information industry players or seasoned manufacturing enterprises) have (or have had) a dynamic, 'driven' founder/leader whose personal charisma has played a major part in fashioning the prevailing corporate ethos and culture However, the relationship between leadership values, structural dynamics and corporate excellence still remains somewhat clouded

Is quality always the answer?

The recurrent emphasis in the literature on product quality is admirable, but perhaps at times a little unrealistic. For instance, cost considerations for older, manufacturing industries, public corporations and both local and central government bodies may be paramount. Taking care of staff in terms of better wages, better conditions or the granting of increased autonomy may be financially impossible. In the public sector, the forces which govern establishment levels are often effectively outside the control of those who would wish to institute new working methods and relationships. Practically, the pursuit of excellence may as often be hindered by the existence of over-arching structural constraints as by organisational inertia or individual apathy.

Economic factors and market forces must also be taken into account. Organisations are to some extent dependent on other organisations in their environments (suppliers, wholesalers, retailers, hauliers, etc.). The economic health of feeder/support companies will have a direct bearing on market dynamics generally. Nor is the excellent corporation immune to shifts in the macroeconomic climate (a fact forcibly illustrated by the recent poor performance of some of the companies spotlighted for their sustained excellence and financial performance by Peters and Waterman) Fluctuating exchange rates, variable labour costs, trade restrictions; unexpected shifts in consumer behaviour; product obsolescence and a multitude of other variables (often totally outside the control of even the most resourceful corporation) can soon tarnish a hard-won reputation for excellence.

If a company is retrenching, there may be a temptation to cut back on after-sales service, reduce warranty periods, simplify quality control procedures, substitute cheaper raw materials, or any one of a number of such strategems to improve margins and control costs. Such options may however result in diminished perceived product quality, which in the long run could have deleterious effects on the company's reputation and ultimately its market share Marks & Spencer's continued dominant position in the high street retailing business is to no small extent based upon its awesome reputation for insisting on first-rate products/raw materials from its nationwide network of approved suppliers.

Corporate culture: an over-naive approach?

The notion of corporate culture is described by Thackray as 'a bag of employee motivation tricks'. He suggests that corporate culture infers a persona of worker that is unrealistic, 'namely one yearning to be free from the drag of weak cultures and to find personal meaning in the strong ones' As he points out, Peters and Waterman have become millionaire culture consultant celebrities peddling dubious wares They fail to recognise, he argues, that an organisation does not *have* a culture – it *is* a culture that can only be understood on its own ground, and not through attitude surveys of employees. The fact that IBM personnel sing company songs does not mean that if company *X* takes up this practice it too will benefit.

Antipathy to the idea of corporate culture is also triggered by the use of words such as 'love' and 'culture' itself. Whilst these terms are applied in a perfectly comprehensible fashion, not everyone understands what they denote. Is it really possible to 'love' colleagues/employees in the way, say, that one loves a dear friend or relative? Can an organisation be said to have or exhibit a culture in the sense that an anthropologist, social historian or aesthete would understand? Does it make sense to talk of a company which manufactures ball bearings as having a culture?

Undoubtedly many of the so-called excellent companies inspire some kind of loyalty in their employees, but a more cynical explanation for effort input over and above that required or expected could include fear: ('I may lose my job', or 'If I don't do this, it will look bad for my future promotion prospects'). IBM, for example, does not permit trade unions to organise its workforce This is not to say that an organisation cannot have a particular 'feel', 'atmosphere' or 'culture' which may positively infect employees' thinking and attitudes, merely to suggest that too much significance may have been accorded the notion (despite the impressive portfolio of anecdotes assembled by Peters *et al*).

A deeper analysis would seek to take account of non-organisational variables, such as social relationships, family and/or peer group pressures, extra-organisational motivations, ambitions and basic personality factors

The concept of corporate excellence should not be dismissed out of hand, even though some of its bases may be challenged as being naive or manipulative. Some commentators feel that the 'guru factor' in modern management writing has spiralled out of control and that theories are fabricated without solid empirical basis. Thackray, for instance, has railed against the 'new wave' literature: 'Management is, or should be, the study of action. It's non-historical, non-meditative. Popular perceptions of best and worst managed companies can only tell us who won and lost a game that is over, whose rules have been forgotten in the pressure of the always shifting present where uncertainty yawns on all sides . . .'

Specifically, however, there are problems of construct validity with the idea of organisational culture. Thackray, in his questioning of the concept's worth, cites the US-based Management Analysis Center which markets a six-point change agenda to help organisations encourage innovation. The tone of this document is not dissimilar to a football coaching manual and conveniently avoids mention of cultural dimensions such as alienation, alcoholism, resentment, monotony and worker solidarity

Just as corporate culture may not translate from one organisation to another, the route plan for achieving excellence will vary depending upon the scale, sector, tradition and market-orientation of different companies, as well as upon a host of exogenous variables, but perhaps most upon the quality and character of the corporate leadership.

REFERENCES

1. Goldsmith, W. and Clutterbuck, D *The winning streak.* Penguin, 1985.
2. Kanter, R.M *The change masters: corporate entrepreneurs at work.* Unwin, 1983.
3. Peters, T.J. *and* Waterman, R.H. *In search of excellence.* Harper & Row, 1982.
4. Peters, T.J. *and* Austin, N. *A passion for excellence· the leadership difference.* Random House, 1985.
5. Lessem, R *The roots of excellence.* Fontana, 1985.
6. Musmann, K. The diffusion of innovations in libraries. *Libri,* **32,** 1982, 257–277.
7. Bingham, R D. *The adoption of innovation by local government.* Lexington Books, 1976.
8. Tricker, R I. *and* Boland, R J. *Management information and control systems.* Wiley, 1982.
9. Woodward, J. *Industrial Organisation.* OUP, 1965.
10. Burns, T. *and* Stalker, G.H *The management of innovation.* Tavistock, 1966
11. Goldstein, M.L. Managing the goldcollar worker. *Industry Week,* **226** (5), 1985, 33–36.
12. Kearney Management Consultants. *The barriers and the opportunities of information technology: a management perspective.* Institute of Administrative Management and the Department of Trade and Industry, 1984.
13. Rothwell, R. *and* Zegveld, W. *Reindustrialisation and technology.* Longman, 1985.
14. Pavitt, K. *Patterns of technological change-evidence, theory and policy implications.* Science Policy Research Unit, University of Sussex, 1983.
15. Thackray, J The corporate culture rage. *Management Today,* February 1986
16. Litwin, G.H. *and* Stringer, R.A. *Motivation and organisational climate.* Graduate School of Business Administration. Harvard University, 1956.
17. Drucker P F. Innovation and entrepreneurship. Heinemann, 1985.
18. Rogers, E.M. *Diffusion of innovations.* Free Press, 1983
19. Dixon, M. How innovators work and what stops them *Financial Times,* 6 March, 1986
20 Ibid.
21. Taylor, C.W *and* Holland, J. Predictors of creative performance. In: Taylor, C.W. (ed.). *Creativity: progress and potential.* McGraw Hill, 1964.
22. Mednick, S.A *and* Mednick, M.T. *Examiner's manual.* Remote Associates Test. University of Michigan: Houghton Mifflin Company, 1967
23. Shapero, A. Managing creative professionals. *In:* Shapero, A. (ed.). *Managing professional people: understanding creative performance.* Free Press, 1985.
24. Botkin, J., Dimanescu, D *and* Stata, R. *The innovators: rediscovering America's creative energy.* Harper & Row, 1985.
25. Sadlow, C.A. Cultivating innovation within the corporate environment. *In:* Bolen, C. *et al. Managing product innovation.* British/North American Committee, 1984.
26. Midwinter, A In search of excellence. six questions for public sector management *Scottish Library Association News,* **188,** July/August 1985.

FURTHER READING

KANTER, R.M. Power and entrepreneurship in action· Corporate middle managers. *In:* STEWART, P L. *and* CANTOR, M G., (ed.) *Varieties of work,* 1982, 153–173.

THACKRAY, J. America's champion corporations. *Management Today,* July 1986, 52–57.

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

Professional
Recruitment
Limited

The advisory role and changes in agricultural information

Nick Read

Research Associate, The Technical Change Centre, Cromwell Road, London

Following the recent paper by Palmer[1] *in* Aslib Proceedings *in which she discussed the changes taking place in agricultural information, this paper discusses the effect of recent government policy on personal advisory work. It seeks to demonstrate that state advisers and private consultants exhibit similar information-related behaviour and share a relatively small clientele Pressures of commercialisation on the public sector will increase competition which will be to the detriment of the public service as it will be unable to provide advice of the same intensity or quality as private consultants who can devote all of their time to their, relatively few, customers.*

Introduction

Palmer[1] recently set out the reorganisations taking place in agricultural research, and the repercussions from these for library and information departments. She also referred in her paper to a project being undertaken by the Technical Change Centre (TCC) examining the information requirements of farmers. This project was specifically concerned with the relationship developing between private agricultural consultants and farmers, and the role of these consultants as the state advisory services were forced to charge for advice

The multiplicity of information sources available to the farmer is well known. As far as advisory work is concerned, since the Second World War there has been a dual approach of private information providers, such as commercial representatives and consultants, and publicly sponsored bodies. The latter includes the Agricultural Development and Advisory Service (ADAS) in England and Wales and the three Scottish Colleges of Agriculture. The TCC study[2] concentrated upon the role of consultants in personal advisory activity and sought to evaluate the future of such advice. The extent to which other means of communication, in particular viewdata and expert systems, might replace personal contact is unknown, but person-to-person advice will still be required in the foreseeable future.

Advisers and consultants

Agar[3,4] has investigated the information-seeking and information-using behaviour of advisers in Scotland, and Bristow[5] included questions on

Aslib Proceedings, 39 (1), January 1987, p 33–39 Printed in Great Britain

information-related activities in her survey of independent crop consultants. The TCC survey also investigated some aspects of these, and ADAS itself has conducted studies in advisory behaviour[6].

Various generalisations are apparent from these studies. The 'private' consultants and 'public' advisers share an increasing reliance on microcomputers, especially in crop consultancy, and indicate similar habits regarding dissemination activities such as organising group discussions, producing leaflets, writing articles for the press and so on. The individual confidentiality expected of a private consultant limits activities of a group nature to some extent but broadly speaking the methods of delivering advice are similar throughout, and the individual approach remains a key element in advisory strategy, though group related activities are proving cost-effective.

Consultants and advisers tend to have similar personal characteristics. ADAS is an advisory service staffed by graduates, and 67 per cent of private consultants possess degrees. Personnel enter ADAS with limited farm experience, often obtained before their degree course, and 60 per cent of consultants have had less than four years experience of practical farming. Indeed, some 20 per cent of independent crop consultants were originally employed by ADAS.

Various studies have also taken place to identify which farmers tend to use the advisory services and under what conditions successful information transfer takes place.

Hearle[7] conducted a survey into farmers' use of advisers and found that farmers with higher education and who farmed larger farms were more likely to use advisers, commercial representatives or private consultants. This was corroborated in a study by the East of Scotland College of Agriculture[8], which found that there was a greater tendency for farmers farming high standard-man-day (SMD) requirement farms to use commercial or college advisory services than those with farms requiring fewer man days.

The TCC survey approached the issue in a different way and asked consultants to categorise their farming clientele as 'below average', 'average', 'above average' or 'well above average', in terms of wealth, size of farm, formal education, age and social standing. This highly subjective approach elicited the response that consultants feel their clientele are above average with respect to wealth, size of farm, education and social standing though of average age (compared to the local farming community). It can be argued, therefore, that they share the same clientele as the public advisory services.

These studies support the view put forward by Rogers and Beal that people who interact the best tend to have similar values, a common level of discourse and act as important referents to each other. More formally, they are homophilic; that is, the 'degree to which pairs of individuals, who interact, are similar in certain attributes, such as beliefs, values, education, social status and the like'[10] has important implications for information transfer.

Bardsley[11] conducted a review of the literature on advisory activities in Australia and found that there was a cultural gap between many farmers and the extension workers who served them. Most farmers came into positions of management following a life-time on farms, they were from a country environment and often were without lengthy periods of secondary or tertiary education. The advisers, in contrast, were college or university educated and much younger, that is they were heterophilic with the farmers, and it was felt that this was one of the major reasons why information transfer was less effective than expected.

Two points can be made, therefore. First, consultants and advisers exhibit similar information-seeking and information-disseminatory behaviour, and second, their clientele are not drawn from 'across the board' but from farmers generally from the higher socio-economic categories, that is, those that are homophilic with themselves. Indeed, with the rise in the general level of education amongst farmers the situation today is, as Dexter, the former Director-General of ADAS, has written, that

> 'many farmers have the intellectual capacity, the formal agricultural education and training, and the time to keep abreast of new technology just as quickly as the general adviser'.[12]

Such farmers are tending to bypass the generalist advisers and go direct to specialists or agricultural research institutes, thereby reducing the number of farmers who use advisers still further.

Changes in agricultural information

Palmer's paper examined the changes that were taking place in agriculture and their impact on the provision of information under broad headings. It included discussion on contract research and public relations, amongst other things. The research by the TCC, however, concentrated specifically on the advisory role played by consultants where government policy in the public sector has had two important impacts: first, the number of advisers is being reduced; second, the state services are to charge for advice formerly offered free.

The three Scottish Colleges have lost £4.8 M from their budget and an estimated 350 jobs. Professor Bell's report[13] suggests a deployment of some 80 ADAS advisers away from oral extension work into information technology, specifically into producing databases for use with expert systems and online computer searching. Three hundred and eighty ADAS posts are to be cut in 1986 as £16.5 M will be chopped from the advisory and statutory budgets for 1987/88. Further back down the chain, the Agriculture and Food Research Council is to lose £30 M from its budget, costing an estimated 1,450 jobs from agricultural research[14] and it is rationalising its various research centres into eight new institutes[15].

The exact details relating to charging for information are still not widely known, though charges for plant and veterinary examination by ADAS have increased by 10 per cent. What is clear from the new Agriculture Bill proceeding through Parliament is that charging will increase.

Effects of these changes on advisory work

One observable trend has already been mentioned, that the number of front-line state advisers is declining. The number of private consultants, however, is increasing. Whilst there have always been consultants specialising in legal and financial matters, crop and soil specialists in the private sector are relatively new, and growing in number. The Association of Independent Crop Consultants (AICC), founded in 1981, numbered eighty-five members and applicants pending election in 1984, and now totals well over 100. Similar growth has occurred amongst membership of the British Institute of Agricultural Consultants (BIAC). Whilst it is not known to what extent these numbers simply reflect previously unregistered consultants registering with either of these two organisations, 78 per cent of all consultants have been practising for less than 13 years[16] and Bristow[17] also noted a steep rise in the number of arable consultants since 1977 The evidence suggests, therefore, that private consultancy is on the increase.

Related to this is the increase in privately-funded research centres such as the Cotswold Cereal Centre, begun in 1979, which conducts trials in agronomy and offers membership for about £300 p.a Such centres have assumed an advisory role.

Given the increasing commercialisation in advisory work, therefore, what will be the results?

It seems clear that there will be increasing competition It has already been noted that advisers and consultants tend to share the same clientele. Previously it was thought that there was no conflict of interest. Dancey[18] wrote that:

> 'The relationship between the ADAS adviser and the private consultant is symbiotic: the former to create awareness and the private consultant to provide the specialist service to the individual client'.

One cannot charge, however, for 'creating awareness'. If advisers have to charge for their services then they require a degree of specialisation comparable to that of the consultant. According to Dexter[19]:

> 'The larger the farming enterprise, the more likely it is that the farmer has a high level of technical expertise and knowledge Further as a desirable customer, he is more likely to be serviced by the technical experts from the supply industries providing agrochemicals, machinery etc. The reputation of the state advisory service with the farmer then depends on providing *highly specialised advice*'.

The emphasis at the end of this quote is mine An advisory service that is only partly commercial, but which has to actively compete with specialised consultants amongst the relatively narrow band of farmers who use such services, will have to devote considerably more than 20 per cent of its time dealing with the 20 per cent, or so, of fee-paying customers. Repeatedly, the private consultants stated that their advice was highly specialised, tailored to each individual client, and that they were available 'seven days a week'. Indeed, many consultants who had previously been ADAS employees entered private practice because they could not provide the intensity of advice that farmers were requesting. Although no detailed figures are available, articles in the farming press hint that this trend is likely to increase. The majority of consultants surveyed indicated that their work was long-term and had to be provided on a continuing basis. Bristow found that arable consultants tended to visit their clients once every seven to ten days at peak times and once every two to three weeks at other times, and the TCC survey indicated that the average clientele per consultant was only twenty-five farmers.

A 'catch-22' situation seems to be developing: either the adviser concentrates upon consultancy, to the detriment of his other clientele, or he fulfils his normal role but fails to satisfy his fee-paying clientele because he is unable to provide the intensity of advice required. One possible alternative would be for ADAS to create a consultancy service, of full-time specialists, who could divert money back into more traditional advisory work. It seems likely, however, that these specialists would probably enter private practice anyway and thereby retain a greater share of the money themselves.

One final point to consider is the effect that charging for information previously provided free of charge will have on the consultants. The TCC survey found that 23 per cent of consultants regularly obtained information from ADAS, and Bristow ranked ADAS second amongst the sources of information for crop consultants. Presumably the costs to the consultants of obtaining this information will increase, and have to be recouped by higher charges to their clientele, or by increasing (if practicable) the numbers of clientele, thereby further intensifying the competition.

Much of what has been suggested is happening now, so that, although the final results of recent government policy remain speculative, some evidence is emerging. Clearly, the next 12 months will see some profound changes taking place in the public sector advisory services, the effects of which will considerably change the dual system of oral information provision, possibly irretrievably

REFERENCES

1. PALMER, J. Information services in a beleaguered agricultural industry *ASLIB Proceedings*, **38**, (4), April 1986, 101 – 113
2. READ, N.J *The role of agricultural consultants and changes in information provision*. TCCR-85-009, Technical Change Centre, London, 1985.
3. AGAR, J. *Information for agricultural advisors*, Report No 1, East of Scotland College of Agriculture, 1982
4. AGAR, J *Information for agricultural advisors*, Report No. 2, East of Scotland College of Agriculture, 1984.
5. BRISTOW, C. Independent crop consulting. Imperial College at Silwood Park, University of London, 1983.
6. ADAS. *Scientific and technical information management in Agriculture Service.* Internal document, 1983
7. HEARLE, D *An investigation into the agricultural media industry of the United Kingdom from the standpoint of producer and farmer, with special reference to*

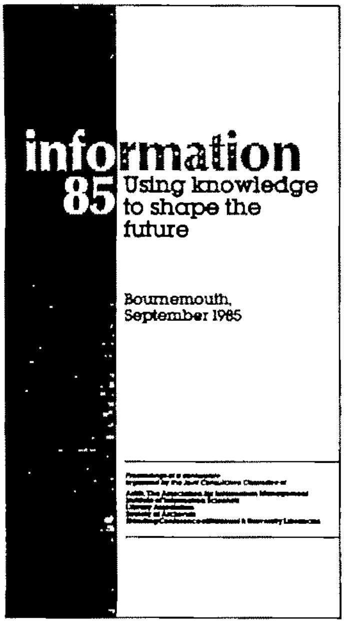
the part played by ADAS· Unpublished M Sc Thesis, University of Reading, 1979.
8 EAST OF SCOTLAND COLLEGE OF AGRICULTURE. *An evaluation survey of ESCA advisory publications.* Technical note No 199, 1978.
9 ROGERS, E M. *and* BEALE, G.M. The importance of personal influence in the adoption of technological changes. *Social Forces* **36,** 1958, 329–335.
10. ROGERS, E M. *and* SHOEMAKER, F.F. *Communication of Innovations,* Free Press of Glencoe, 1971.
11. BARDSLEY B. *Farmers assessment of information and its sources.* School of Agriculture and Forestry, the University of Melbourne, 1982.
12 DEXTER, K. *Developing an advisory service to meet the changing needs of agriculture.* Paper presented to Danish advisers, October 1980, personal correspondence.
13 BELL, R.L. *Report of a study of ADAS by its Director General,* MAFF, 1984
14. Based on figures of 800 by 1986/87 and an additional 650 due to restructuring mentioned in the *AFRC first and second Corporate plans.*
15. AFRC *Corporate Plan 1986–1991,* March 1986.
16. READ, N J. *op. cit.*
17 BRISTOW, C. *op. cit.*
18 DANCEY, R J Farm management advisory work: the present and the future. *J. Agric Econ.* **34,** 1983, 329–335.
19. DEXTER, K. Paris seminar on Diffusion of Knowledge and Extension 17–18 March 1983 personal correspondence.

CORRIGENDUM

The references to Harry East's article, *Aslib Proceedings* **38** (9), p.334 should read as follows:

1 COLLIER, H.R. Long-term economics of online services and their relationship to conventional publishers seen from the database producer's viewpoint. *Aslib Proceedings,* **30** (1), 1978, 16–24
2. ELIAS, A Marketing for online bibliographic services. *Online Review,* **3** (1), 1979, 107–117.
3. EAST, HARRY Special libraries and information services and the development of the UK information industry. *Aslib Proceedings,* **36** (2), 1984, 61–78.
4. EURIPA. *Survey of the European information industry: its electronic developments* Commissioned by the European Information Providers Association (EURIPA) with support from the Commission of the European Communities and researched and prepared by Business International SA, Geneva: June 1984.
5 EAST, HARRY, *op cit.*
6 EURIPA, *op. cit.*
7. BIBBY, LINDSAY. Marketing by online database producers. Unpublished M.Sc thesis, The City University, September 1985.
8. PETTS, CATHERINE, *and* RENNIE, JANET. The provision of business information and market research services by research associations *Business Information Review,* **2** (3), January 1986, 3–19

Information 85



information 85 Using knowledge to shape the future

Bournemouth,
September 1985

Even if you weren't among the 1,500 people who gathered at the Multipartite Conference in September 1985, you can still benefit from the knowledge and ideas which were shared there. Delegates to the Conference too can now obtain a permanent record of all the papers given.

Twenty-one distinguished speakers worked around the theme *Using knowledge to shape the future*, applying the concept to their own areas of expertise, and interpreting it accordingly. Presentations on policy issues in the US, Europe, and more particularly France, reflected the growing need to study the international aspect of information management. Papers in the sections *The public versus private debate* and *Who pays the piper?* showed an acute awareness of the need to understand the relation of socio-economic factors to the information profession.

The book costs just £18. Members of the participating organisations are eligible for the discounted price of £15. Overseas prices are £21 and £18 respectively.

ISBN 0-85142-198-9, pb, 180pp; 185mm × 290mm

Proceedings of a conference
organised by the Joint Consultative Committee of

Aslib The Association for Information Management
Institute of Information Scientists
Library Association
Society of Archivists
Standing Conference of National & University Librarians

The next best thing to being there…

Aslib

Aslib

Prospects for Information Service

Essays in honour of
DAPHNE CLARK

COLIN HARRIS & PETER TAYLOR, Editors

Now available from Aslib
The Association for Information Management
£15

Proceeds from the sale of this volume will be donated to the British Heart Foundation

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

FACULTY POSITION

Tenure-track appointment as Assistant Professor, Associate Professor, or Professor to the School of Library and Information Studies The School is committed to progress and research in all phases of information science and studies and seeks applicants from research-oriented scholars who wish to be part of a community that views its mission as a continuing study and redefinition of these areas Applicants sought from specialities within librarianship as well as from related fields Appointee will be expected to advise students in the MLIS, Ph D , DLIS, and post-MLIS Certificate programs, engage in research and publication; and share in School, University, and/or public service. Ability to teach one or more core courses (bibliographic organization, information retrieval, management) desirable though not required Qualifications teaching ability, relevant practical experience, Ph D or comparable evidence of research ability Title and salary depend on qualifications. Available July 1, 1987, or by arrangement

Applications and nominations postmarked by midnight, Wednesday, April 1, 1987, to Robert C. Berring, Dean, School of Library and Information Studies, University of California, Berkeley, CA 94720.

THE UNIVERSITY OF CALIFORNIA IS AN EQUAL OPPORTUNITY, AFFIRMATIVE ACTION EMPLOYER.

FACULTY POSITION

Tenure-track appointment as Assistant Professor, Associate Professor, or Professor to take responsibility for the School of Library and Information Studies curriculum in the area of information management including organization and access to information in non-library information settings This includes teaching existing courses and developing new areas of the curriculum as needed Applicants sought from relevant specialities within librarianship and from such fields as organizational theory, business administration, or communications. Appointee will be expected to advise students in the MLIS, Ph D., DLIS, and post-MLIS Certificate programs, engage in research and publication, and share in School, University, and/or public service Ability to teach one or more core courses (bibliographic organization, information retrieval, management) desirable though not required Qualifications teaching ability, relevant practical experience, Ph D. or comparable evidence of research ability. Title and salary depend on qualifications. Available July 1, 1987, or by arrangement

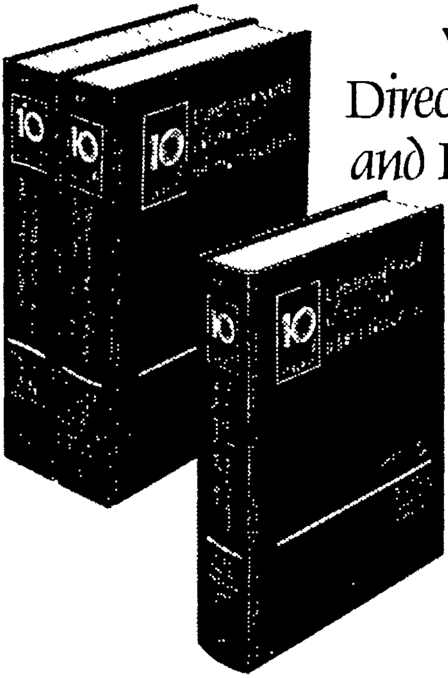
Applications and nominations postmarked by midnight, Monday, February 2, 1987, to Robert C. Berring, Dean, School of Library and Information Studies, University of California, Berkeley, CA 94720.

THE UNIVERSITY OF CALIFORNIA IS AN EQUAL OPPORTUNITY, AFFIRMATIVE ACTION EMPLOYER.

Add over 18,000 branches to your library!

with the new 10th edition of the

Directory of Special Libraries and Information Centers



Edited by Brigitte T. Darnay

Volume 1, **Directory of Special Libraries and Information Centers in the United States and Canada.** 1,775 pages in 2 parts. $335.00/set.

Volume 2, **Geographic and Personnel Indexes.** 890 pages. $275.00.

Volume 3, **New Special Libraries,** an inter-edition supplement. $285.00

26 JUN 1989

Need information on a special subject?

Here is a key to the holdings, services, and personnel of over 18,000 special libraries, information centers, documentation centers and similar units in the United States and Canada.

The libraries covered in Volume 1 are sources of in-depth information on 3,000 topics—some as general as business, and others as specialized as environmental studies or census data. A detailed Subject Index uses some 3,000 terms to provide access to collections that cover highly specific topics.

Entries provide up to 25 points of information about each library including: Name, address and phone number . . . Sponsoring organization . . . Information specialty . . . Names of persons in charge and other professional staff members . . . Holdings . . . Special collections . . . Publications . . . and, new to this edition, Participation in electronic mail . . . and much more.

Volume 2 provides two additional approaches to the information in Volume 1. The Geographic Section lists the institutions by state or province. Furnished are names, addresses, primary fields of interest, and a reference to where additional information can be located in Volume 1. The second section is an alphabetical roster of all the library personnel mentioned in Volume 1. Each person is identified as to professional title and affiliation.

All Gale books are available on 60-day approval.
Enter a Standing Order and receive a 5% discount.
Send a check with your order and receive an additional 5% discount.
Customers outside of the U S and Canada add 10%

For Fast Service—
Order Tollfree:
800-223-GALE

Gale Research Company • Book Tower • Detroit, MI 48226

Aslib PROCEEDINGS

Volume 39 Number 2 February 1987

THE M25
PLANNING, DEVELOPMENT AND TRANSPORT

Proceedings of a seminar organised by The Faculty of Architecture, Planning and Estate Management, Oxford Polytechnic in association with The Aslib Planning, Environment, Transport Information Group.
Oxford, 18 April 1986

Introduction 39

SE Regional Planning and the M25: the SERPLAN Regional Monitoring Group 40
Martin Simmons

Retailing and the M25: a review of studies 48
Gareth Morgan

Sources of information/documentation on the M25 56
Doreen Lang

ISSN 0001-253X

ASLIB PROCEEDINGS

Volume 39 **FEBRUARY 1987** **Number 2**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib, Annual subscriptions to non-members: £65 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, *Aslib Proceedings,* Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager. Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Introduction

The Faculty of Architecture, Planning and Estate Management, Oxford Polytechnic in association with Aslib Transport and Planning Group seminar – 'The M25 planning, development and transport'. Oxford Polytechnic, Oxford, 18 April 1986

By background I am an engineer and in my early days I was very much involved in road planning, when roads were built for one purpose only, to save travel time for travellers. Those of you who follow things closely might observe that there is very little difference today. But there has been a slight move – there is much greater interest now in the wider implications of major road construction and, indeed, of many other types of major investment, particularly in the public sector.

Evaluation methodology has attempted to take into account effects such as the environmental impact, the social impact, the impact on land use and the economic impact of major road building. Of these, the economic and land use impact have been most ignored. There is little account taken of them in Department of Transport documentation and it is almost impossible to have a reasonable debate about them at public enquiries, Government White Papers don't consider them other than to state that investment in roads stimulates economic activity, which presumably means, at least in part, that they think it influences land use development.

One of the problems is that each individual part of the motorway network is looked at separately, but it is the effect of the network as a whole that is important. After all, the motorway network is one of the major public investment programmes that there has been. The network has significantly transformed accessibility in the UK. Certainly no part of that network has attracted as much attention as the M25, which not only bypasses London, but also links so many of the other motorways. Opinion seems to be divided as to whether the M25 is the panacea for all the problems of the South East, or is destined to become another great planning disaster. One thing is certain, the South East will never be the same again.

Whether you are from the planning side, concerned with understanding and controlling the impact of the M25, or from the development side, trying to anticipate opportunities, I feel sure you will find the papers presented here of great interest.

BOB BIXBY
Principal Lecturer in Transport Planning,
Department of Town Planning, Oxford Polytechnic

COMPUTERS & COMMUNICATIONS

What are the implications for business of the convergence of computer and communications systems?

What are the business opportunities of the future?

What are the likely developments in hardware, software, personnel requirements?

Where can you find the answers to these questions?

A major new report and analysis that no-one in business can afford to ignore.

To: Aslib, Information House, 26/27 Boswell Street, London WC1N 3JZ
Please send me full details of **Computers and Communications.**

Name ....

Organisation ....

Address...

....

South-East regional planning and the M25: the SERPLAN Regional Monitoring Group

Martin Simmons

Chief Strategic Planner, Kent County Council, Vice Chairman of the Regional Monitoring Group and leader of its Economy and Employment Working Party, SERPLAN

Paper presented at the Faculty of Architecture Planning and Estate Management at Oxford Polytechnic in association with Aslib Transport and Planning Group seminar – 'The M25 – planning, development and transport', Oxford Polytechnic, Oxford, 18 April 1986

The purpose of SERPLAN

The endurance of a regional planning forum in the South East (SERPLAN), its current strong activity in response to recent lack of interest by the Government, and its survival despite the abolition of the Greater London Council (GLC), is testimony to the crucial importance the local planning authorities attach to it. This stems mainly from the dynamics of social and economic change in the metropolitan region: the forces of dispersal – of people in search of better housing, of economic activity arising from changes in industrial and occupational structures – and decline in the Capital itself.

For the Home Counties, on the receiving end of decentralisation, their development planning activities have long required a sound understanding of these forces of dispersal from London on the one hand, and why their areas are attractive to growth on the other. For London, a period of seeking planned movement out into the rest of the South East (ROSE) changed in the mid-1970s to seeking development restraint there, and co-operation in policies to regenerate the Inner City. Most recently the Home Counties themselves, increasingly aware of an imbalance between growing prosperity and developmental pressures in the West of the region and an East in need of development, are seeking ways of achieving a better mutual balance. SERPLAN enables these regional strategic issues to be addressed, and its activities provide a basis of information-gathering and analysis so that local planners can speak authoritatively about them. It is gratifying that the Secretary of State for the Environment, is now acknowledging such work.

Aslib Proceedings, 39 (2), February 1987, p 41–48 Printed in Great Britain.

Regional monitoring

SERPLAN's principal activity in providing this regional understanding for its Member-authorities is in monitoring the trends and forces across the region, in and out of London, and providing a body of information on these matters in publications and internal papers. The aim of this work is to enable planners undertaking statutory development planning to have at their fingertips adequate intelligence about the external influences on their areas regarding the causes of growth and decline. This work concentrates on the key issues of concern and is therefore selective: population change, employment change and housing provision have received the most attention to date. Monitoring has also attempted to consider transportation change in a holistic way related to these key concerns.

Current regional monitoring work began in 1980, following the Government's final withdrawal from earlier collaborative arrangements. SERPLAN set up a Regional Monitoring Group of concerned officials, charged in its first year with identifying what should be done and what information was available, and an initial report was produced in 1981. The procedure was established of annual cyclical activity, six to nine months work beginning in the spring, followed by a reporting period in the early part of the following year. For 1981/2 it was decided to concentrate on a few key issues which were of especial concern. One of these was an examination of the impact of the M25.

The M25 Impact Study

This monitoring study was stimulated by an awareness that by creating the best accessibility to be found anywhere on the British side of the Channel, through its orbital linking of the main radial routes from London to the rest of Britain and the Continent, the M25 would create the most attractive locations for future development. However it would do this where planning policy is at its most restrictive (the Metropolitan Green Belt), and at a time when policy is seeking to stem the decline in London's economy.

By harnessing the combined resources of Member-authorities around the M25 ring, the SERPLAN working party assembled information on the areas of concern. These included assessments of:

- the relative strengths and weaknesses of the policy constraints to development around the ring;
- development commitments at that time;
- the changing pattern of accessibility, traffic flows and travel times.

This enabled an evaluation of pressures for development to be built up, through an aggregation of 'profiles' at the district scale, and related to the current state of development policy and provision, sector by sector. The findings were expressed in terms of geographical sector around the ring.

They concluded that in the Western sectors of the M25 ring, between the A3 and A1 radials, the new motorway would reinforce existing development pressures recognised in the notion of the 'Golden Triangle'; that existing development provision would prove inadequate to meet these pressures; and that this is where the Green Belt is at its most fragmented and vulnerable. In contrast, the sectors on the other side of London, between the A12 and M20 and including Docklands, have been experiencing considerable economic decline, but offer major development opportunities and would have their hitherto poor accessibility transformed by the advent of the M25. An increasing regional imbalance was pointed out, between a prosperous West attractive to investment, and a depressed Eastern corridor with little current redevelopment interest.

Policy proposals were put forward arising from these conclusions, particularly: to 'steer' development around from the West to the East using the M25 as a promotional mechanism; to spread the M25 benefits into London by advancing strategic transport links to Docklands; to promote well-located centres in outer London and in the Home Counties able to cope with further development pressure; and to consider whether new forms of development could be provided for, perhaps in the Green Belt itself. Having established such opportunities, restraint policies could be reinforced in sensitive areas, particularly in the West.

These proposals found some favour with the Government, which in the fullness of time (March 1984) published an eight-paragraph amplification of the cursory 1980 Heseltine regional guidelines[1]. This accepts the objective of steering development from the West to the East, but is ambiguous in other respects: it does not see Green Belt policy as requiring change, but urges planning authorities to provide for the growth sectors and distribution activities, which it says require well-located sites; by implication this means related to the M25. The impact of this statement, however, was wider; concurrently with its acknowledgement of this issue, the Department of the Environment (DoE) was beseiged by controversy surrounding housing land and the future of the Green Belt, and the ground was fertile for SERPLAN to suggest that a more comprehensive enlargement of regional planning guidance should be undertaken. The Secretary of State agreed in the summer of 1984, and this led to the document *South-East England in the 1990s – A Regional Statement*, put to him in autumn 1985. Regional monitoring work undertaken in the meantime, had continued to illuminate the issues[2-3].

The organisation of regional monitoring

In 1982, it was decided to establish three Working Parties on the main subject areas of Demography and Housing, Economy and Employment, and Transport. Subsequently these Working Parties have operated the annual cycle, and a Steering Group has co-ordinated matters, provided an overview and produced a spring report to SERPLAN. Three such monitoring reports have so far been published, in 1983 (SC 1890); 1984 (RPC 45), and 1985 (RPC 390). In 1985 a fourth Working Party, on Retailing, was added. The 1986 report, covering the 1985/6 monitoring cycle, includes the first findings on Retailing[4].

The structure of SERPLAN's regional monitoring comprises, therefore, a Steering Group (chaired by the County Planning Officer of Hertfordshire), and four Working Parties who in turn have generated some special sub-groups. The Working Parties are the main centres of activity, meeting every six to eight weeks during the May to January period. Specific work items are shared among their eight to twelve members. The strength of this approach is that the individual resources of information and expertise can be brought to bear or sought, and pooled. The Steering Group provides the link with SERPLAN's Member machinery, sets the general themes and seeks an overall balance.

Monitoring topics

Demography

This involves keeping track of population change across the region, including an examination of census output and Office of Population Censuses and Surveys (OPCS) mid-year estimates. Migration flows, particularly between London and ROSE and to and from the region, are closely watched. Projections and forecasts are closely examined, from both OPCS/DoE and the London Residuary Body Research and Intelligence (formerly GLC) Unit, including Household projections to the end of the century and their components. Labour force forecasts are also covered. This material is presented in comparative form across the region.

Housing

Monitoring includes keeping track of policy reviews and changes and trends in the availability of resources. The position of the existing stock and its maintenance, especially in London and the main urban areas in ROSE, is a particular focus of attention. Start and completion trends across London and ROSE are recorded. The housing – land debate requires close attention: the land supply studies are pulled together and a regional overview is provided, in consultation with the House Builders Federation. During 1984/5, these monitoring activities provided the vital information input to the deliberations of the regional strategy's Housing Issues Group.)

Economy and employment

National indicators and the relative performance of the region (employment change, production and productivity, unemployment) are examined. The relative employment health of the component parts of the region is measured, including the production of resident-based unemployment data by London Borough and Shire District. Much progress has been made over the last two years in monitoring land supply for industry and offices, including the development pipeline across the region, now incorporating quality of provision and relative take-up. New monitoring topics concern occupation change and examination of business start-up activity.

Transport
Government policy and the evolving financial resource situation is kept under close observation. Progress on improvements to the regional strategic network (defined earlier by SERPLAN), and traffic flows on its main routes, including the situation on the M25 and its intersections, is a particular focus. Changes in commuting to work, and on the public transport network, are examined. Activities in the region's ports are also watched. This Working Party is now involved in assisting SERPLAN's Transport Issues Group, which is preparing transport additions to the new regional strategy.

Retailing
This new topic has arisen from political concern over the pressures for regional centres related to the M25, and the trend of decentralisation from traditional high streets (particularly of food shopping) both inside London and in ROSE. The social and economic impact of these forces is now a major issue. The Working Party is examining what is occurring and assessing the implications, to assist policy reviews. This illustrates the way monitoring activity can respond to new issues of concern across the region, and provide intelligence and understanding for local planning authorities.

SERPLAN's regional strategy and the M25

The Regional Statement put to the Secretary of State in the autumn of 1985 was based on work by two 'think-tank' groups of officials, one concerned with Housing and the other with Economic Issues[1]. These were informed by the output from the regional monitoring outlined above. In addition to the normal work, mentioned under 'Economy and employment' above, the Economy and Employment Working Party mounted a major survey of employment change in the region during 1984 and 1985, based on data from the Annual Census of Employment augmented by recent Department of Employment material and County Council surveys, using shift-share and components of change techniques. This examined the comparative performance of different parts of the region and their strengths and weaknesses, looking at inner and outer London, the West and East of the region etc in some detail.

The findings illuminated the nature of growth and decline across the region and provided understanding of the forces operating, so that policy formulation at both regional and local scales would be more soundly based. The increasing unattractiveness of older urban locations to modern industry, and the accelerating comparative advantage of outer locations arising from the combination of the structural shift of employment from manufacturing to services and changing property needs, were starkly revealed. The M25 is adding an orbital accessibility impetus to this already entrenched shift in the location of economic activity.

The SERPLAN Statement divides the region into three:

- a 'western arc' from Cambridge to Crawley where the proposed strategy is to apply restraint sensitively within the aim of fostering the region's economic growth;
- industrial London, the lower Thames corridor and the more depressed East coast and manufacturing centres, where major interventionary action is proposed;
- the residual areas of lower pressure where local development potential is to be encouraged.

The significance of the M25, in the ability it offers to steer development from a potentially overheated West to the 'needy' East is recognised. Furthermore, the M25 will extend labour markets round the ring, making it much easier for people to travel longer distances to employment opportunities. This can work both ways: for example, residents of north-west Kent will become within 30 minutes drive-time of Reigate and Gatwick and even commuting to Stansted will be feasible, while firms locating in Essex or Kent will be able to attract key staff from Hertfordshire or Surrey. Given planned improvements in transport into London, it will be increasingly possible for Inner City residents to commute to opportunities in the Outer Metropolitan Area.

The prospects for 'steering' development from West to East using the M25 do, however, need hard scrutiny, particularly in the light of the findings of the study mentioned above as regards the conditions being sought by the economic growth sectors (the new technologies, etc.). The East is seen as having certain advantages, in terms of the most extensive and cheapest development land in the region, and is becoming attractive for certain types of activity, notably distribution. Its major disadvantage is its poor 'image' in the eyes of investing institutions. This applies to its general environment (legacy of old industry, unattractive housing, poor access away from the strategic routes) and to its labour market characteristics. Whilst it offers plenty of potential employees, including office workers, the quality of the labour market is suspect, particularly in the extent of its skills and the comparative paucity of training facilities. In contrast, the momentum in the West is maintained by the environmental and labour market factors being highly favourable there. These conditions of attraction must be addressed in the East if the notion of steering is to succeed.

This year's monitoring, looking at the comparative policy attitudes and measures of development stimulus being applied across the region, is demonstrating that restraint, particularly of economic development, is being steadily reduced. Coupled with the inherent momentum mentioned, considerable further development is likely there, unless overheating perceptions grow. The success of the basic strategy therefore puts an emphasis on whether and how the East can achieve a 'critical mass' situation to induce growth of its own volition, not relying on restraint elsewhere (a dubious proposition, in any event).

There are some hopeful indicators. Foremost is the achievements and prospects in the London Docklands, particularly if it succeeds in securing the decentralisation of the City and if the STOLPort is a success. This, together with the current extension of the M11 and the East London River Crossing linking to the improved A2, thereby providing two means of rapid access to the M25, would make the Royal Docks area very attractive. Docklands could then be a major growth pole in East London. Then there is the Channel Tunnel, which is likely to benefit locations nearer the M25 rather than East Kent and could provide a major impetus to development in the office and commercial growth sectors on this side. The likelihood of maybe two very large out-of-town retail leisure complexes in this area would be a major attraction (and such concepts could be restrained in the West).

However, public action is going to be necessary at the strategic scale in four respects to ensure that the conditions for further growth in the East are met:

- investment in training facilities and skill development to improve the quality of the labour market: it will be a test of Government response to SERPLAN as to what action it is prepared to take in this respect, i.e. beyond land use measures;
- augmenting the choice of development opportunities by adding to the extensive traditional industrial sites a range of environmentally attractive possibilities for the growth sectors, which will mean selective relaxation of the Green Belt in this area and promotion of new forms of development with a 'green' character;
- provision of housing opportunities of the right quality;
- significantly increased investment in local highway and other transport infrastructure, particularly to ensure better links to the M25, and in derelict land reclamation and other environmental improvements aimed at making redevelopment along Thames-side more attractive.

SERPLAN's 'Regional Statement' and the Secretary of State's willing response to it requires a review of the *modus operandi* of the Regional Monitoring Group, to ensure that its continuing work is adequately related to the strategy, i.e. that it is monitoring the key elements of it. This will not involve a radical shift from the existing pattern, and clearly the more that consistent information is built up year-on-year on a time-series basis the more valuable it becomes. However, specific aims of the strategy, where shifts of policy are envisaged, will need tracking.

The focus on the Eastern Thames Corridor is an early example of this. A sub-group has recently been set up to monitor the nature and performance of land provision and infrastructure needs for economic development in this area, and to identify the way in which public sector programmes need to be enhanced to secure private investment. This will make specific the general thrust of the regional strategic guidance. It illustrates the vital integration between land use, transportation and resource concerns in regional monitoring work, and makes the point that in presenting findings to Government, Departments other than DoE need to be invovled.

Conclusions

SERPLAN has moved from focussing on the impact of the M25 itself to relating the significance of this principal addition to the region's infrastructure to the general forces operating to change its social and economic structure. The importance of the motorway is enormous, but it is in reinforcing existing locational trends while opening up new potentials in favour of the East, rather than itself altering the development geography of the region. Its significance is therefore now interwoven into SERPLAN's regional strategic thinking, and monitoring is proceeding on this basis.

Such monitoring requires a continuing assemblage of information and intelligence and SERPLAN's great strength is its ability to amass and evaluate such material. It does this by harnessing the work done by its Member-authorities pursuing their structure-planning roles, who input information regarding change in population, housing, the local economies and transport to a consistent framework which can be centrally analysed. A regional perspective is then possible, without which, in the London region, planning cannot be soundly based given the power of the external influences. This can be coupled with feedback from those involved in operating policies, and here district participation is important.

SERPLAN's central resources are very limited, however, and progress depends on the time devoted to the Working Parties by Member-authority staff. Much has been achieved in the last five years, but it is important if this momentum is to continue that the London input is enabled to develop and improve. It is gratifying that the London Residuary Body is maintaining the former GLC's Research and Intelligence Branch, which is one important contributor. Onus is now placed on the London Boroughs, through the London Planning Advisory Committee's forthcoming Secretariat, to provide the information and analytical capacity to the Working Parties in the housing and economic development areas. If this can be secured, SERPLAN can play an expanding role in presenting the combined analysis of Local Government on the issues facing the region, of which the M25 is perhaps the most tangible symbol.

REFERENCES

1. SERPLAN, 1985a. South East England in the 1990s: A Regional statement, RPC 450.
2. SERPLAN, 1984. Regional Trends in the South East, the South East Regional Monitor 1983–84, RPC 45.
3. SERPLAN, 1985b. Regional Trends in the South East, The South East Regional Monitor 1984–85, RPC 369.
4. SERPLAN, 1986b. Regional Trends in the South East, The South East Regional Monitor 1985–86, RPC 535.

Retailing and the M25: a review of studies

Gareth Morgan
Associate, Nathaniel Lichfield and Partners

Paper presented at the Faculty of Architecture, Planning and Estate Management at Oxford Polytechnic in association with Aslib Transport and Planning Group seminar — 'The M25 — planning, development and Transport'. Oxford Polytechnic, Oxford, 18 April 1986.

Introduction

In my paper I want to concentrate on three different aspects of the study of retailing around the M25. First I want to consider the implications of the opening of the M25 for the retailing industry in terms of its effect on market areas, in other words the theory of the effect of the M25; secondly, I want to examine some of the major developments or proposals that have arisen as a result of the M25 and then finally I'm going to consider the type of studies that these new proposals have created a need for, and the information requirements of these studies.

Effect of the M25

In simple terms, the M25's most dramatic effect is going to be on journey times. It smooths out accessibility around the fringes of London so that any one location is more accessible to a much wider area. It is also going to have secondary effects on other roads in London. For example, it has led to increased traffic on certain radial routes as people use them to get to the M25.

In general, time savings are much more significant for the longer journeys that are taken for the higher value comparison shopping trips, than for the much shorter trips traditionally taken to go to convenience superstores or retail warehouses. For many forms of retailing, and again particularly for convenience superstores and retail warehouses, the most significant implication of the M25 is the general stimulus it's going to bring to the areas in its general vicinity rather than specific accessibility shifts. In other words, the attraction of more jobs and a competitive labour market increases the spending power available to retailing located in the existing free standing towns outside the motorway and the London suburbs within the motorway.

Town centres

One of the effects of the M25 is to significantly increase the competition between existing town centres around the motorway. This is simply because the M25 actually reduces journey times between the centres and therefore gives individual shoppers more alternatives in terms of the number of centres that they can get to within a given time. This means that town centres no longer find themselves with a captive catchment population which they may have had in the past. These captive catchment populations were brought about because of the disincentive of long journey times to shop in competing centres. With this disincentive removed, car-borne shoppers are more likely to carry out their shopping trips for major durables in those centres which have better car parking, better shopping facilities and a better environment. This means that the M25 is putting pressure on those centres which are easily accessible to it to enhance their existing facilities and environment. If they don't do that, these centres will lose out to other centres which they're now competing with which do improve the quality of the facilities offered. Thus in terms of town centres, the M25 actually creates both a problem and an opportunity for the centres accessible to it.

Retail warehouses

As far as retail warehouses are concerned, the M25 is not particularly significant for individual units. However, retail warehouses are a relatively recent retailing innovation and they're evolving all the time. The most recent generation of retail warehouse development is in the form of retail warehouse parks with several units located on the same site with shared ground-level car parking. Because of the wider range of goods on offer in these retail warehouse parks, they tend to have a significantly wider catchment population than the individual units. So such parks will benefit considerably from being in the very accessible locations which the M25 and M25 junctions offer.

Superstores

The importance of the M25 to free standing stores depends on the type of store. While M25 locations may be helpful to large convenience stores in increasing their catchment area, most car-borne traffic to these stores comes from within fifteen or twenty minutes drive-time. Although the M25 can play a role in increasing the catchment area of these stores, the proximity to a large urban population without the need to travel on a motorway is, in general, of considerably more importance.

Free standing stores

However, for another category of free standing store retailers, who are currently increasing in numbers, in the durable sector, the M25 is going to be much more significant. An example is Marks & Spencer, who over a year ago announced its intention of seeking out-of-centre sites for development of stores of about 150,000 square feet gross, 75,000 square feet net. It will benefit greatly from the accessibility advantages of M25 locations. These stores, again, will expect to draw trade from up to half an hour's drive-time.

Out of town regional centres
The type of retailing that will actually benefit the most from the M25 is the out of town regional or sub-regional shopping centre. The success of Brent Cross has shown the demand for such large accessible out-of-centre shopping developments with associated, preferably ground level, car parking. Junctions of the M25 provide ideal locations from a retailer's point of view for development of this sort. The most recent of these proposals, are seeking to combine leisure uses with the retailing element, both to increase the attractiveness of the centre and the catchment area and also, to a certain extent, to sweeten the pill with the planners to get planning permission.

In conclusion, on these different types of retailing facilities, it's the largest retailing developments, both the regional shopping centres and the retail warehouse parks that benefit most from locations next to the M25, followed by the durable, free standing retailer, such as Marks & Spencer.

In general the individual retail warehouse units and convenience superstores will perhaps prefer a location close to the M25, but this is only one of many other considerations, proximity to a large urban population being particularly important.

There are many examples of retail development and proposals around the M25, which bear out the trends that I have mentioned. A number of town centres around the M25 have either recently undergone major development or have development or redevelopment proposed. Watford and St Albans in Hertfordshire, Enfield in North London and Dartford in Kent, are all examples of town centres with current proposals for major retail development. In terms of retail warehouse parks, pressure for this type of development accessible to the M25 has been shown very clearly in West Thurrock. There are two parks proposed here both of which have recently received planning permission, each comprising about 275,000 square feet of retail warehouse floor space, probably with about ten or twelve units, and they would anticipate having a catchment area extending to at least half an hour's drive time.

There are actually few free standing superstores in specific M25 locations. Again in West Thurrock, adjacent to one of the retail parks, the Tesco Superstore is a good example of such a store.

Since announcing its intention to look for out-of-centre sites, either on its own or in conjunction with Tesco, Marks & Spencer have actively declared that it is looking for sites accessible to the M25. The first of this new type of development seems likely to be at Brookfield Farm, Cheshunt in Brobourne, which is located about five minutes drive north of the M25 along the A10. Marks & Spencer have been granted planning permission for this development. There is already an existing Tesco Superstore on the site, which is going to be extended by approximately 25,000 square feet to make it the same size as the new Marks & Spencer. This joint development would have some 2,000 ground-level car parking spaces.

It is, however, the pressure for new sub-regional shopping centres around the M25 that has actually received the most publicity. Again, in West Thurrock, Capital & Counties and Town City have both been promoting large shopping developments, each with about one million square feet of retail floor space and associated leisure facilities. Both these planning applications have been called in by the Secretary of State for Transport and will be the subject of a planning inquiry.

In addition to the two centres proposed at Thurrock, which are actually the furthest on the way to gaining planning permission, there is an outstanding application for a sub-regional shopping centre, on a Green Belt site at Wraysbury in Middlesex, close to Junction 13 of the M25. This is also for about one million square feet of durable floor space.

In addition, there are two other current proposals for major durable shopping around the M25: at Hook in Surrey, close to the junction of the A3 with the M25 and at Bricket Wood in Hertfordshire, in the north-west section of the M25. At Hook, London and Edinburgh Trust have put in an application for a one million square foot regional shopping centre on a 54-acre site and at Bricketwood, Town City have put in an application for half-a-million square feet of floor space.

Retail Impact Studies and Sources of Information

There are a variety of factors that have been regarded as important and will be material in deciding whether these developments are granted planning permission. One consideration which has been regarded by local authorities as material in most, if not all of these proposed developments, is retail impact.

Retail impact can mean different things to different people. At present, perhaps the most important view is that of the Secretary of State for the Environment. He has made it fairly clear what his views are and, therefore, what Government policy will be in relation to deciding appeals where retail impact is an issue. He stressed in July 1985, in answer to a Parliamentary question (July 1985), that it was not the function of the planning system to inhibit competition amongst retailers, or among methods of retailing, and that planning should take into account benefits to the public which flow from new developments in retailing. He stated that the public needs a wide range of shopping facilities and will benefit from competition between them.

Going on to look specifically at impact, he said 'it will be necessary to take into account in exceptional circumstances of the cumulative effects of other recent and proposed large-scale retail developments in the locality and to consider whether they are on such a scale and of a kind that could seriously affect the vitality and viability of a nearby town centre as a whole. For example, whether they seemed likely to result in a significant increase in vacant properties or a marked reduction in the range of services the town centre provides, such as could lead to its general physical deterioration and detriment of its future place in the economic and social life of the community.' He also recognised that although town centres need to maintain their diversity and activity, the range of shops and services would change in response to changing conditions.

As a firm Nathaniel Lichfield and Partners (NLP), has been actively involved in several of the proposals that I have already mentioned, acting for the developer or retailer in negotiating with the local authority. In many cases, NLP has been asked by the local authority to prepare a retail impact study to accompany the planning application. It is the information required to carry out such studies and the source of that information that is considered below.

There is actually a considerable amount of information required to produce a comprehensive impact study. It comes from a variety of sources and its availability will depend upon the area in which the study is carried out. In looking at the information requirements, I concentrate on some of those sources that are commonly used. I am not seeking to pretend that this is a comprehensive list.

The first step in looking at the impact of any proposal is to define a catchment area and this varies considerably with the type of proposal I have discussed. Different average journey times relate to different types of proposal. In some cases, catchment areas are defined in terms of competing opportunities. However, more often they are defined in relation to off-peak drive-time isocrones. These isocrones can either be prepared by test driving or, alternatively, by desk study. In some cases they may be carried out by traffic consultants, in others by ourselves.

To define a catchment area on the basis of drive-time isocrones, it is useful to refer to documents which have surveyed existing comparable developments in various parts of the country and give information on the trade draw of such comparable facilities. There are a number of such studies which have been done for superstores, retail warehouse developments and major shopping centres, in particular Brent Cross.

Having defined the catchment area, we have to then go on to estimate the existing and forecast population within the area. We normally look at a test date of a period perhaps a couple of years after the store has opened. This allows the trading patterns of the store and the surrounding areas to settle down. In some cases counties are able to provide both existing and forecast population for areas that we actually define. In other cases they are able to provide existing figures and forecast for districts only and it is necessary for these to estimate proportions within catchment areas.

When talking about existing population, we're usually looking at the situation in 1985, the latest year for which the Office of Population Censuses and Surveys (OPCS) population estimates are available. However, this situation is slightly complicated because in some cases county councils accept these figures as a base for forecasting. Whereas in others they will make their own estimates, based on the 1985 estimates and in some other cases, local authorities will forecast from a 1981 census base, ignoring the most recent mid-year estimates. So in carrying out an impact study, it's important to ensure that the existing population and population forecasts for the different areas that we are looking at are as compatible as possible.

Having estimated the catchment population, we then need to look at the available spending in the catchment area. Now this can be calculated by multiplying the population data by a spending per head figure. Spending per head figures can be derived from information provided by the Unit for Retail Planning Information (URPI). For a large number of town centres in the country URPI will provide estimates of spending per household and spending per head on various categories of goods for the population within a series of rings round the town centre. They will also provide estimates for any defined local authority area, if required. These URPI estimates are based on information from the Family Expenditure Survey and a detailed analysis of socio-economic characteristics obtained from small-area census statistics and have proved to be generally acceptable at public inquiries into retail development.

As well as providing information on spending by type of goods URPI now also produces what it calls analyses of business turnover potential. This is essentially an estimate of turnover per head by type of business instead of by type of goods. Clearly there is a difference between the two in so much as today's convenient superstores are selling convenience goods on 60% of their floorspace and durable goods on the remainder but an estimate of convenience business turnover potential actually allows for all the spending that may be carried out in those businesses. The URPI estimates of spending per head are currently made for 1984 and need to be updated to whatever year is being used, as the base date and then the forecast year or test date. As well as producing the spending estimates for individual areas, URPI also produce a series of Information Briefs. It publishes about six of these each year on a variety of subjects connected with retailing.

On a regular basis URPI produce an analysis of past trends year by year in spending both by type of goods and by type of business. Associated with the analysis of past trends is a trend-based forecast of spending per head. These can be used both to update their 1984 figures for particular areas and also for forecasting to the test date adopted. The same information briefs also contain price indices for spending by goods, type of good or by type of business. It is essential when carrying out an impact study to ensure that throughout the study a consistent price base is maintained. It is not significant what the base year is but it is critical that it is kept consistent throughout the study.

Having worked out population and available spending per head in catchment areas it is then a fairly straightforward matter to work out the available spending and the potential growth in that spending. This can be converted into a crude quantity of need estimate of additional retail floor space by dividing the available spending growth by a figure representing average intensity trading in terms of turnover per square foot. Such figures for average trading intensity can be obtained from specific studies. Trading intensity varies significantly between types of retailers. For example, convenience floor space generally turns over at least twice the rate of durable floor space, which in turn trades at a higher intensity than many retail warehouses, particularly those selling DIY goods.

To forecast the impact, which is measured in terms of percentage trade diversion from surrounding centres it is necessary to forecast the turnover of the store or the retail development proposed. This is done by using a similar turnover-per-square-foot figure to the one I mentioned and simply applying it to the net floor space of the development or it can be done by building up the stores turnover by estimating what proportion of catchment area trade it could expect to draw. The retailers do carry out their own forecasts of turnover and they have data on the turnovers of existing stores but they are very reluctant to release this information and so generally in the planning enquiry system it's up to local authorities and agents acting for the developers or retailers to make their own forecasts.

With floor space for durable goods it is often necessary to make allowances for an increase in turnover per square foot over time as there has been a trend of increased efficiency over the last fifteen years. There has been no such consistent trend in floor space for convenience goods.

Very often the most difficult step, is to estimate the future turnover of surrounding competing centres. The latest comprehensive data on turnover of floor space in centres is the 1971 Census of Distribution. Virtually everywhere in the UK and particularly around the M25 where many new developments or redevelopments have taken place, this 1971 information is outdated. Given the impracticability and expense of trying to survey each centre to assess the amount of floor space present by type of business the only potential source for this information is county or district councils, or local authorities. The extent to which county councils have this information varies considerably, although in general the counties around the M25 have much better databases than many other counties and districts in other parts of the country. Hertfordshire, for example, has details of retail floor space broken down into convenience and comparison business floor space for each town centre in the county for 1985. I believe Surrey and Essex have similar information available.

In addition to existing floor space the existing retail commitments have to be considered. This information is again usually collected from local authorities who have details of applications, permissions and applications under appeal, allocations, etc.

There are a number of other useful sources of information for retail studies which I will mention briefly.

Up-to-date floor plans of all the major centres in England and Wales are provided by Chas. E. Goad Limited. These Goad plans are a very useful guide to the range of retail facilities offered in a centre and to such things as the number of vacant units at a certain time. They are revised relatively frequently and provide a very useful base for survey work in the town centre.

In addition Goads recently started to produce a register of out-of-centre shopping facilities throughout the country. This register is structured by local authority districts, for each of which information is given on population, social and economic characteristics, principal settlements, communications and an analysis of shopping activity, both in centres and out-of-centre.

A further useful source of information is the monthly publication by the Economist Intelligence Unit called *Retail Business*. This provides detailed statistical analyses of many different facets of the retail trade. Of particular use are forecasts of future levels of consumer spending. These sets of forecasts are produced quarterly and usually run into the medium-term future of about six years. Forecasts of total consumer spending are produced for each region and national forecasts are broken down into goods types. These goods types forecasts are considerably more detailed than the trend-based URPI forecasts, which are only broken down into convenience and comparison goods.

The Central Statistical Office's monthly digest of statistics also contains some information on retailing. It provides time-series statistics of volume and value of retail sales by a broad category of business. These are particularly useful for assessing up-to-date trends and also calculating an up-to-date price index.

The Institute of Grocery Distribution produces annual directories of supermarkets and superstores throughout Great Britain. These provide a considerable amount of useful information, including address, net sales area, car parking and date of opening for convenience stores.

As a conclusion on information sources and their use in carrying out retail studies and impact studies in particular, perhaps the most important thing to say is that there is no comprehensive data source or sources which can be called upon as standard input for any retail impact study. Having said that, in general, the area around the M25, including the Greater London Council area, has a far better statistical base than many other areas in the country. Each study has slightly different information requirements and each study in its catchment area tends to have different data availability. Thus every case has to be treated individually and on its own merits. Since the 1971 Census of Distribution there has been no further attempt to supply comprehensive floor space and turnover data for shopping centres in this country.

Sources of information/documentation on the M25

Doreen Lang

Information Manager, British Road Federation

Paper presented at the Faculty of Architecture, Planning and Estate Management at Oxford Polytechnic in association with Aslib Transport and Planning Group seminar – 'The M25 – planning, development and transport'. Oxford Polytechnic, Oxford, 18 April 1986

When I started to think about preparing this paper, I realised just what a marathon task I had set myself. If you consider a few basic facts about the M25, you will get some idea of what I mean:

- when complete it will be 120 miles round – if in a straight line it would stretch from London to Nottingham;
- it passes through five counties in addition to Greater London (Essex, Kent, Surrey, Bucks and Herts) and it encompasses over six million people;
- it has been built in forty-one sections by fifteen contractors and its design has been in the hands of twelve leading firms of consulting engineers and three of the former road construction units;
- when complete it will have taken fourteen years to build and its total cost will probably be in excess of £1,100 million at current prices;
- parts of it have already carried over 90,000 vehicles per day (vpd) and the M4/M25 interchange is predicted to be carrying 200,000 vpd by the end of the century.

It is a massive project which has, of necessity, generated a massive amount of information. It would, indeed, probably not be difficult to compile an encylopedia on it. I will, however, do my best to discuss sources in a logical way.

As the main problems as I see them are not the dearth of information but rather the wealth of it, its dispersed location and the difficulties which have to be faced in trying to get access to it, I propose to deal with each of these in turn.

Subject matter

The wealth of subject matter can be broken down into seven main headings, namely:

1. History
2. Planning

3. Design
4. Construction
5. Traffic
6. Impact
7. Miscellaneous

although not all of them are mutually exclusive.

History

Although the M25 in its present form is barely fifteen years old, the concept of an orbital ring goes back over eighty years. It was first mooted seriously by the Royal Commission on London Traffic which reported in 1905 and since then it has featured in all the major reports on London. These have included:

- Sir Raymond Unwin's plan for the solution of London's problems published in 1933;
- The Highway Development Survey prepared by Sir Charles Bressey and Sir Edward Lutyens in 1938;
- the 1944 Abercrombie Greater London Plan with its five rings, including a D ring about twenty miles from the centre of London and an outer E ring;
- the 1969 Greater London Development Plan with its three rings, with the outer one roughly on the line of the earlier D ring.

Even when the concept of an outer orbital was formally 'adopted' in 1971 by the Department of the Environment (DoE) in the Peter Walker programme of roads for the early 1980s, it was still to be found under a variety of headings – North Orbital Road, South Orbital Motorway, Ringway 3 and M25. By 1972–73 the North Orbital had become known as the M16. Only in the late 70s was the whole route designated M25 London Outer Orbital Route. Even then, it was looked at as a transport project rather than a development one. There was no in-depth study of the social and economic impact of the road nor how it might act as a catalyst for development.

As far as the transport aspects are concerned, from 1971 onwards perhaps the best source of general information has been the old Roads in England White Paper, the new roads policy statements, Department of Transport (DTp) press releases and Hansard.

This somewhat chequered and lengthy history sets the pattern for the rest of the information on the M25. It is anything but clear cut and easily accessible. A tremendous amount is available, but to find it one needs to have a guidebook or directory. This is, in fact, something to which Aslib might do well to give urgent consideration.

Planning

The sheer size of the project and its piecemeal development over fifteen to twenty years makes the M25 unique in the planning of highway projects in the UK. Almost every facet of planning procedures from feasibility studies, through public consultation exercises, line order and compulsory purchase order public inquiries to High Court actions, has been experienced on a scale not seen elsewhere. Special groups set up to support or oppose the various sections have proliferated. The weight of documentation they have generated is enormous.

In the time available to me I have not been able to establish the exact number of public inquiries that have been held but it must be in excess of thirty. Most lasted several months, some were adjourned and restarted more than once, all received masses of written evidence and heard many hours of oral evidence from a wide range of objectors and supporters. The DTp's evidence alone usually included: general explanatory statements, descriptions of the scheme, statements by traffic witnesses, agricultural witnesses, landscape witnesses, noise witnesses, and economic witnesses. On one occasion alone some fifty-three DTp documents were deposited. All were made public. All contained a great wealth of information. If we look at just one you will get some idea of what I mean:

M25 Poyle-Maple Cross section – DTp statement
- General statement on M25
- History
- Current policy and progress
- Existing roads and need for improvement
- Public consultation
- Preferred route
- Development of proposals
- Traffic flow and design standards
- Lighting and sign gantries
- Leitch report
- Publication of draft proposals and detailed description thereof
- Effect on people and property
- Objections and representations
- Documents on deposit (38)
- Where the documents could be seen

For some of the major or more controversial sections, a similar weight of material came from other supporters of the scheme or objectors to it.

In some cases barristers were used to present the evidence to the Inspector and to be cross-examined. Sometimes shorthand writers were present to record the proceedings and transcripts were available. Following the conclusion of the inquiries there was the Inspector's report, the Findings of Fact, conclusions and recommendations thereon and the Secretary of State's decision. All of these generated a lot of documents.

In addition there were also six separate High Court actions and a ruling by the Master of the Rolls, Lord Denning. For all of these there were transcripts prepared by the Association of Official Shorthandwriters and available from the Royal Courts of Justice.

Design

Under the design heading I would include technical details of the various sections of the motorway, e.g. the standard of the carriageway, the nature of the safety barriers, the lighting, the depth of the sub-structure, the landscaping of the road, the number of trees to be planted – of which incidentally there will be two million – and all the special problems faced in inserting a major road which runs mainly through the Green Belt.

Once again much of this can be found in the DTp's evidence at the public inquiries but it is also in the hands of the consulting engineers and contractors. In the latter case, the glossy brochures prepared by the contractors or consultants for the official opening of the various sections can be most useful.

Construction

Bearing in mind that the M25 will have been built in forty-one sections by fifteen contractors either individually or as joint consortia and hundreds of sub-contractors over fourteen years (and not forgetting the massive volume of materials which must have been involved in the construction work), the amount of information on this aspect of the M25 must be enormous but very dispersed. Perhaps the best sources are the brochures prepared by the contractors and articles in technical journals.

Even to seek accurate information on the timetabling of the various schemes require considerable research. It's not easily available in any one place. From time to time the Secretary of State for Transport has given the information in response to parliamentary questions and it has been included in news releases and in the media.

Traffic

To appreciate fully the traffic flows for which the various sections of the M25 were built and the flows which have been experienced on the sections open to date, it is necessary to look at the DTp's general manuals on design standards and the national traffic forecasts as well as local circumstances. This is, however, complicated once again by the long time span involved in the construction of the various sections. Neither the design standards manual nor the traffic forecasts have remained static throughout the M25's gestation period and the changes have not necessarily been uniform. For example, for a section of road built to dual three lane motorway standard since 1974 the recommended traffic flow range has been 45,000–85,000 vpd. Before 1974 the range was 27,000–57,000 vpd.

As with the planning and design aspects mentioned earlier perhaps the best source of information on traffic forecasts for the various sections of the motorway and the expected effect on other roads in the area concerned is the DTp's evidence to the public inquiry and the cross-examination thereon. In most cases this is very detailed:

> M25 Micklefield Green-South Mimms section – Statement on traffic and economics
> – Basis of the present proposals

- Traffic between Winch Hill and Roehyde
- The funcions of the slip roads
- Local traffic
- Non-local traffic
- The overall traffic forecasts
- Cost/benefit analyses
- Conclusions
- Summary
- + Appendix on multi-route allocation
- Tables
- Traffic assignment maps

Information on flows since the various sections have been opened is less easy to obtain although some has been made available in response to parliamentary questions and by the police in the areas which have experienced very heavy flows, e.g. the Dartford Tunnel and the whole of the sections covered by the Surrey police. They are furthermore somewhat transitory until the whole ring is complete.

Data on traffic management, signing and so on, is also difficult to find although there have been several articles in technical journals especially on certain innovations, e.g. the provision of closed circuit TVs feeding pictures to the traffic control centres by fibre optic cables.

Impact

As might be expected much has been written on the impact of the M25 on such things as:

- the housing/property market;
- other roads, including lorry bans or other lorry management schemes which have followed the opening of sections of the M25;
- the Green Belt;
- inner London;
- other modes of transport;
- economic development;
- employment;
- tourism

but once again it is of course widely dispersed.

Miscellaneous

This could, of course, include almost anything else but some of the major items I have in mind are:

- cost;
- highway authorities involved;
- comparison with other orbital routes in Britain and in similar cities overseas;
- maintenance considerations;
- plans for renewal and reconstruction;

- provision of information for drivers;
- service areas;
- compensation;
- road safety including accident statistics and weather conditions (the DTp commissioned a study on fog-prone areas and produced maps showing their location).

Once again in most cases it is impossible to arrive at comparable information for the various sections – for instance even allowing for inflation there is no way that contract prices can be translated into accurate figures in constant terms nor to add up to an exact total. It would, for instance, be quite meaningless to say that the M25 had cost on average £10 million per mile even though the whole 120 miles may have cost a total of around £1,100–1,200 million at current prices.

Location and form of information

Having looked at the range of information which may be sought and given some indication of its magnitude, it would perhaps now be useful to consider some of the main holders of it – they would include:

- the DTp nationally and its regional offices (the M25 is covered by three of the latter – Eastern, South Eastern and Greater London);
- the Greater London Council (GLC) (now through the residuary body) and/or some of the London borough councils, the five county councils through which the road runs and also the adjoining county and district councils;
- the fifteen contractors and the hundreds of sub-contractors;
- consulting engineers responsible for studies or design work;
- the five police forces concerned – i.e. Thames Valley, Metropolitan, Essex, Kent and Surrey, and possibly the Chief Constables' M25 Committee which co-ordinates their work;
- the Transport and Road Research Laboratory;
- estate agents;
- developers;
- materials and equipment suppliers;
- motoring organisations;
- special groups e.g. LAMP (Leatherhead and Ashtead Motorway Protest Group), DANDAG (Darenth and North Downs Action Group) and the umbrella M25 Co-ordinating Committee, as well as the M25 Now support group;
- universities, polytechnics and other educational establishments.

And not only the holders but also the form in which it is available. This too is very wide ranging and includes:

- the national press, including special supplements or series of articles of which there have been several, e.g. in *The Times* and the *Financial Times*;

- technical journals, including special supplements, e.g. *Construction News* and *New Civil Engineer*;
- conference papers and proceedings, e.g. Town and Country Planning Association (TCPA), PTRC and British Road Federation (BRF);
- structure and local plans;
- county Transport Policies and Programmes (TPPs);
- council minutes and committee papers;
- special reports such as the GLC traffic monitoring reviews which have provided substantial information on traffic flows within and, in the earlier days, also outside the M25 and the SERPLAN study of the impact of the M25;
- Hansard both Commons and Lords;
- Select Committee reports;
- Written and oral evidence at public inquiries especially that given by the DTp and by local authorities, including those on other adjacent development, e.g. the inquiry into expansion of Heathrow Airport;
- Inspectors' reports;
- reports of legal proceedings;
- films/videos/slides;
- maps DTp, FTA and AA and
- a SE Tourist Board brochure on holidays in the South East showing the easy access to places by the M25.

All this may have given you the impression that all you need to do is to contact the company, organisation or department concerned and the information will be forthcoming. This, I regret to say, is not the case. Much of the data has been collected for quite legitimate but private or commercial reasons.

Often it is not in the form in which you might want it and the holders/owners cannot afford the time or money to prepare it in that form. Often it is no longer easily accessible, e.g. public inquiry evidence.

Access to information

It may, therefore, be helpful if I end by suggesting some of the ways in which you may be able to get at it or at least find out what is available. This list is by no means comprehensive but I hope it will give you some pointers:

- Firstly, although the greater part of the M25 is outside the former GLC boundary, perhaps the best sources are the GLC Intelligence Unit and the GLC Research Library, which have collected and stored information on all aspects of London activities well beyond the GLC's administrative boundary. Despite the abolition of the GLC it has, for the present, remained intact under the auspices of the London Residuary Body and its services are still available including access to the mainframe computer on which the Greater London Transportation Study data is stored through the ACOMPLINE and URBALINE data basis.

URBALINE provides:

- concise summaries covering all the important news items of the day
  plus
- reviews of new official and alternative publications
- correspondence
- central and local government press notices
- news from weekly specialist magazines and newspapers

ACOMPLINE covers:

- not only journal articles
  but also
- books
- central and local government reports
- conference proceedings
- theses and
  a wide range of grey literature.

Both are available commercially through DIALTECH and SCICON

- Secondly, GLC publications, particularly the Research Library Document Guides are exclusively distributed by Technical Communications, a company based in Letchworth. They include: annual traffic monitoring review and RDG No 63 – the impact of the M25;
- other computer databases which may be appropriate include POLIS which hosts the Lords and Commons Hansards, BLAISE the British Library service, the Transport and Road Research Laboratory's IRRD service and several commercial services;
- there are also bibliographies prepared by the Headquarters Library of the DoE/DTp and by other bodies, e.g. M25 – planning and development implications prepared in 1984 by the Environmental Services Unit of the Department of Town Planning at the Polytechnic of the South Bank in London in their occasional papers series;
- other sources could include the DoE/DTp Library through interlibrary loan services and not directly from the library, the British Newspaper Library, the National Lending Library, the libraries of the professional institutions, university or polytechnic libraries and bodies like the Transport Studies Group at University College, London.

Finally it is perhaps necessary to point out that the volume of information is unlikely to remain static. Even when the whole of the motorway is open to traffic, it will only signal the end of the first phase. In addition to the inevitable maintenance and reconstruction requirements, consideration will need to be given to the design capacity of certain sections and their possible widening, the probable need for a third Dartford crossing, the impact of the completed road, the provision of service areas of which at present there are none, the inadequacy of some junctions, traffic growth which is so dependent upon economic growth and fuel price and the possible establishment by British Rail of gateway stations adjacent to the M25.

In conclusion, even though some information may be lacking, I should like to repeat the point I made at the beginning – that it might be very helpful if there was available a directory of sources on the M25 and that it should be updated at regular intervals.

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

Professional
Recruitment
Limited

TRANSLATING & THE COMPUTER

International Conference and Exhibition

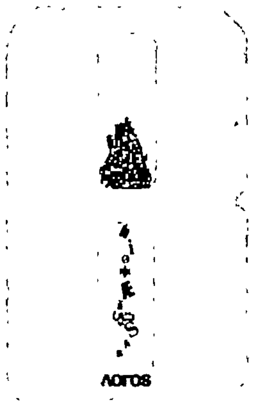
The world of the translator is changing fast. Developments in technology are transforming many aspects of technical translation. It is vital for language professionals to keep up to date if they wish to be at the forefront of their profession.

Experts from 8 countries will review recent technical and political trends in machine translation at the Aslib conference in London on 13-14 November 1986.

Translating and the Computer 8: a profession on the move will be accompanied by an exhibition of some of the most advanced translation products now available.

To reserve your place telephone Barbara Hobbs on 01-430 2671 or mail the coupon opposite to:

Aslib Professional Development Group
Information House
26/27 Boswell Street
London WC1N 3JZ



Translating and the computer. The worlds leading forum on machine translation.

London 13-14 November 1986

PRIORITY RESERVATION/
ENQUIRY FORM

Please
reserve me a place
send me further details
of the Translating and the Computer conference

Name . . . .
Organisation . . . .
Address . . . .
. . . .
Tel No. . . . .

Aslib

Aslib

Prospects for Information Service

Essays in honour of
DAPHNE CLARK

COLIN HARRIS & PETER TAYLOR, Editors

Now available from Aslib

The Association for Information Management

£15

Proceeds from the sale of this volume will be donated to the British Heart Foundation.

INFORMATION MANAGEMENT

FROM STRATEGIES TO ACTION

Edited by Blaise Cronin

NOW AVAILABLE FROM ASLIB PUBLICATIONS

A major new book which traces the current developments in information handling in the UK.

Eleven experts from diverse fields of information management have produced this thought-provoking collection of essays which together analyse both the theory and the application of this emerging discipline.

An invaluable guide for practising information managers and students alike.

Available now at £19 — or just £15 to members of Aslib. Complete and mail the form on this page to:

Aslib Publications (Sales)
Information House
26-27 Boswell Street
London WC1N 3JZ

If you prefer, simply telephone 01-430 2671, ext 244 to reserve your copy.

ISBN 0-85142-193-8

ORDER FORM

Please send me .... copies of
INFORMATION MANAGEMENT:
From strategies to action
I am/am not a member of Aslib
Name ....
Organisation . ...
Address ....
I enclose a cheque for £.... .. (£19 per copy, £15 to members of Aslib)
OR Please invoice me

Aslib

NEW FROM BUTTERWORTHS

Information Sources in the Life Sciences *(Third Edition)*

H V Wyatt

Information Sources in the Life Sciences (3rd Edition), the latest volume in the Butterworth **Guides to Information Sources** series, is a selective guide to the literature of the life sciences written by research scientists and information specialists

Each chapter contains an essay on different aspects of searching as well as a guide to the subject literature New sections such as that on biotechnology include information on national and international government activity and health and safety

Research workers at all levels as well as librarians will find this an essential information tool

Contents: Introduction Reading and searching, libraries Reading for profit current awareness Searching the literature by computer Secondary sources abstracts, indexes and bibliographies Databanks cells, culture, germplasm and stock collections, herbaria and museum collections Guides to the literature Biochemical Sciences Microbiology including mycology, virology, tissue culture, immunology and use of animals Biotechnology Genetics · Zoology Ecology Botany History of biology

1987 200 pages approx 216 x 138mm 0 408 11472 X Hardcover £30 00 approx

The 'Guides to Information Sources' Series

Information Sources in the Life Sciences Third Edition *0 408 11472 X £30 00 approx*

Information Sources in Finance and Banking Volume 1 — Data Sources · *0 408 015489* **Forthcoming 1987** *£25 00 approx*

Information Sources in the Earth Sciences Second Edition *0 408 01406 7* **Forthcoming 1987** · *£45 00 approx*

Information Sources in Metals and Materials · *0 408 01491 1* **Forthcoming 1987** *£25 00 approx*

Information Sources in Agriculture and Food Science *0 408 10612 3 £40 00*

Information Sources in Architecture *0 408 10763 4 £34 00*

Information Sources in Economics Second Edition *0 408 11471 1 £29 00*

Information Sources in Education and Work Second Edition *0 408 70923 5 £[illegible]*

Information Sources in Engineering Second Edition *0 408 11475 4 £42 00*

Information Sources in the History of Science and Medicine *0 408 10764 2 £40 00*

Information Sources in Law *0 408 11474 6 £38 00*

Information Sources in Management and Business *0 408 01345 1 £35 00*

Information Sources in Medical Sciences Third Edition *0 408 11473 8 £43 00*

Information Sources in Physics Second Edition *0 408 01474 1 £37 00*

Information Sources in Politics and Political Science *0 408 11470 3 £43.00*

Information Sources in Science and Technology Second Edition *0 408 01467 9 £32 50*

Butterworths

meeting professional needs

BOROUGH GREEN, SEVENOAKS, KENT TN15 8PH UK

Aslib
PROCEEDINGS

Volume 39 Number 3 March 1987

Do VDU's make you sick? 65
Noreen MacMorrow

Pharmaceuticals – an information based industry 75
Angela R. Haygarth Jackson

Telematics and retribalisation 87
Blaise Cronin

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **MARCH 1987** **Number 3**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, *Aslib Proceedings,* Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Do VDU's make you sick?

Noreen MacMorrow

Department of Information Science, University of Strathclyde, Glasgow

Introduction

The VDU or visual display unit is one of the most pervasive manifestations of technological change. It is also the one which has aroused the most controversy and, at times, misinformation about possible adverse effects on the health of users. As VDU's become increasingly common in the workplace it is important to examine these allegations and consider their veracity.

VDU's have been implicated in a number of reports as causing a variety of medical complaints ranging from adverse reproductive outcomes to eyestrain, skin rashes and stress. The purpose of this article is to examine the known evidence for these complaints in order to assess if the threat to health posed by the use of VDU's is a real one. It will be seen that many of the problems mentioned can and indeed should be avoided by the adoption of sensible policies for the use of VDU's, including proper attention to ergonomics both of the machine itself and also the software and due consideration to the question of the design of jobs for VDU users. However, since these subjects are of themselves too important to skim over they form the basis of a second article to be published in the April issue of *Aslib Proceedings.*

VDU's and health

The VDU is basically a screen based device with a keyboard. Currently most of these screens are based on cathode ray tube technology which enables text, numbers and, in some cases, graphics to be represented electronically on screen. Keyboards tend to follow the standard QWERTY layout, sometimes with the addition of a pointing device or 'mouse'. While all VDU's share some basic components the same is not true of VDU jobs. They can be used for a wide variety of tasks from programming to word processing, online searching to data entry. Thus the nature of the work done at a VDU can vary dramatically and this has important implications for health. Tasks done at a VDU will differ on such dimensions as:

- the skills required
- the visual emphasis of the task
- the pace of work
- the length of time spent at the machine
- the control which an individual has over the work being done

Aslib Proceedings, 39 (3), March 1987, p 65–74 Printed in Great Britain

These factors will themselves influence the extent to which an individual feels 'healthy' at work. Health, according to the World Health Organisation, is: 'a state of complete physical, mental and social well-being not merely the absence of disease and infirmity'. The important point is that many of the problems reported to be associated with the use of VDU's arise not from the machines themselves but from the nature of the jobs for which they are used.

What, then, are the major areas of concern relating to health and the use of VDU's at work? Broadly they fall into the following categories:

- adverse pregnancy outcomes and the related question of radiation emissions from VDU's
- eye strain and visual fatigue
- migraine
- photosensitive epilepsy
- muscle pain, aches and strains
- skin rashes
- stress

Each of these will be dealt with in turn.

Pregnancy

The effects of VDU's on pregnant women have been the subject of intense research, discussion, debate and sadly much rumour and speculation. Reports of 'clusters' of miscarriages and birth defects among groups of female VDU operators have led to the fear that VDU's are connected with adverse pregnancy outcomes and that the link may be a causal one.

There are several important issues raised here. Obviously, first and foremost, there is a need to ensure that this 'health hazard' is thoroughly investigated to see if such a link exists. There is obviously no justification for allowing women to face a possible health risk to themselves and their unborn child nor is it desirable that they face increased anxiety and insecurity as a result of questions as to the safety of their using a VDU. On the other hand the wholesale 'banning' of pregnant women from VDU work is not an attractive prospect since it would make the already considerable difficulties which many women face in obtaining employment insurmountable. What is needed is an evaluation of the research already conducted to establish whether risks are indeed present.

From many of the reports of 'clusters' of miscarriages and birth defects among VDU workers it would appear that the use of the VDU was responsible for these adverse outcomes and that a high proportion of pregnant VDU workers had such experiences. The question here is one of establishing whether such conclusions are justified. As with any particular group of workers experiencing ill health it is first necessary to see whether the cause is an occupational one. This is usually done by comparing the incidence of ill health in an occupational group, in this case VDU workers, with the incidence in the population as a whole. If it is then found that the rate of ill health in the occupational group is significantly greater than that in the population as a whole, then the cause of that ill health is usually thought to be an occupational one.

With regard to reports of adverse pregnancy outcomes among VDU workers such comparisons have proved difficult to undertake. First, what is a VDU worker? Should that include all individuals who use a VDU even if infrequently? Should it include those who work in the same vicinity as the machines? Second, what is an adverse pregnancy outcome? These can cover a range of things from:

- spontaneous abortions or miscarriages
- birth defects
- low birth weight
- still birth

A third problem is with the control group. Should this include all women of reproductive age or just working women?

The only base line figures available for adverse pregnancy outcomes against which the experiences of VDU workers can be assessed relate to all women, not just those in employment. They show that pregnancy is a hazardous affair in its own right with 15-20 per cent of all known pregnancies resulting in miscarriage, 3-4 per cent of all births producing a child of 4lbs or less, 2.5 per cent of all babies being malformed.

The current known occupational risks to pregnancy are:

- exposure to radiation
- exposure to chemical and biological agents

However, there are a number of other well known risks to pregnancy which include:

- maternal age – miscarriages are more common among the under 20 and over 30 age group
- maternal abnormality and disease
- number of pregnancies – the likelihood of miscarriage increases with the number of pregnancies
- socio-economic class
- exposure to infectious agents
- provision and quality of antenatal care
- delivery methods
- smoking and alcohol

In establishing an occupational cause for adverse pregnancy outcomes among VDU workers such other causes would need to be eliminated.

A further problem in evaluating the evidence on this question concerns the methodology of the studies reported of 'clusters' of miscarriages. Often they have dealt with sample sizes which are too small to be valid statistically. That may sound rather callous but doctors at the Occupation and Health Unit at Toronto University estimate that in order to evaluate a 'cluster' and to avoid statistical coincidence it would be necessary to study 12,000 working women over a two year period – half of whom used VDU's in their work and half of whom did not. Since the distribution of adverse pregnancy outcomes in the population will follow the normal bell-shaped distribution curve and given the ever wider usage of VDU's by women of reproductive age, together with the well established risk of miscarriage in early pregnancy, it is thought that very many 'clusters' are to be expected on the basis of chance alone.

There have been some well constructed studies of the effect of VDU's on pregnant women, most recently by the National Board of Occupational Safety and Health and the National Social Welfare Board in Sweden. This study is using the Swedish miscarriage register to examine pregnancy outcome in occupational groups which have a low, medium and high exposure to VDU's. Their preliminary findings do not indicate that there is a relationship between the use of VDU's and adverse pregnancy outcomes.

In the UK the Health and Safety Executive report that of the three reliable epidemiological studies which have compared the reproductive outcome in VDU workers as against non-VDU workers, none has indicated an excess rate of adverse pregnancy outcomes among the former.

Also relevant to this discussion is the question of radiation emissions from VDU's since these are the prime suspect with regard to adverse pregnancy outcomes. VDU's do give off radiation as, indeed, do microwave ovens, televisions, the sun and nuclear explosions. Radiation is an emotive term and it is important to realise that there are a number of forms of radiation, not all of which are harmful. Broadly, radiation comes in two types: ionising and non-ionising. It is generally accepted that while VDU's do give off some ionising radiation it is well below background levels. The Health and Safety Executive report that:

- the level of X-ray emissions found from VDU's are substantially below background level and do not add significantly to the latter
- with regard to ultraviolet emissions only UVA type emissions have been detected. UVA can be hazardous but only in very large quantities. Such quantities are not found to be emitted from VDU's

With regard to non-ionising radiation emissions from VDU's these are of three types – visible light, microwaves and electromagnetic emissions. Visible light must be emitted from a VDU in order for it to function. However, with a full screen of characters and at maximum brightness the light emitted from a VDU has been found to be of negligible risk to the eye. This is also the case with microwaves. The National Radiological Protection Board have found microwave emissions from VDU's to be barely detectable and consider them not to be a hazard to health.

Any concern left about radiation in relation to VDU's has centred on a discussion of the effects of low frequency electromagnetic emissions. Such electric and magnetic fields can be detected in the vicinity of a VDU or indeed from any electrically powered device like a hair dryer or shaver. Such fields are difficult to measure but are thought to be well below levels thought hazardous. VDU's also emit VLF (very low frequency) and ELF (extremely low frequency) electromagnetic emissions. It is agreed that these do occur however, scientists differ as to whether they believe such radio waves cause changes in the human body. A lot of concern was generated by a scientist called Delgado who claimed that his study showed that chicken embryos exposed to such emissions had changed. A number of studies are attempting to repeat Delgado's work on chicken and mice embryos. These have not yet been published but initial reports suggest that his findings cannot be repeated and, therefore, that his findings cannot be substantiated. Other research suggests that the type of emissions used by Delgado are not similar to those from a VDU.

Therefore, with regard to radiation and VDU's, the following conclusion can be drawn: there is no evidence to suggest that the radiation levels emitted by a VDU pose a health hazard and this is confirmed by both the Health and Safety Executive and the National Radiological Protection Board.

Thus in the context of adverse pregnancy outcomes and VDU's we can say that:

- VDU's do not appear to emit levels of radiation likely to adversely effect the outcome of a pregnancy
- none of the reliable studies conducted on pregnancy and VDU work has shown there to be any link between such work and adverse pregnancy outcomes

For women of reproductive age who use VDU's it is important that they are aware of these facts and that they do not have to rely on 'scare' stories and misinformation. Anxiety and stress resulting from uncertainty about the health hazards of VDU's can of itself be inimical to a successful pregnancy. Indeed, some individuals after being presented with the facts may still feel that there is no smoke without fire and again may be worried about having to use a VDU while pregnant. For that reason many employers are now giving pregnant women the right to transfer off VDU work for the duration of their pregnancy should they so wish and many trade unions are including this in their negotiations. It is also important that the jobs that pregnant women do with VDU's are well designed and that the environmental conditions are appropriate for VDU work so that some of the other ailments described below are not experienced.

Eye strain and visual fatigue

The introduction of VDU's into the workplace has raised many questions concerning their effect on the eyesight of operators. In November 1985 *Health and Safety at Work* magazine reported the results of their survey of people using terminals in their work which found that 70 per cent of respondents experienced eyestrain and 34 per cent blurred vision. It is important in this context to distinguish between eye damage and dysfunction and eyestrain. Medical evidence suggests that VDU work does not damage eyesight nor aggravate existing eye problems. However, there is evidence to suggest that it can lead to short term visual discomfort or visual fatigues – eye strain. Such a conclusion is hardly surprising when we see the type of work which some operators are asked to do and the conditions within which they carry out their jobs.

Eyestrain and visual fatigue are largely preventable if attention is paid to the visual environment in which the operators work. The most common source of eyestrain comes from glare – from the screen itself, the lighting in the room both artificial and daylight, and from the room surfaces. Avoiding glare via the proper positioning of the VDU unit and the provision of appropriate lighting can go a long way to reducing the visual discomfort experienced by some operators. Traditional office lighting is not suited to reading characters on a reflecting vertical surface, it was designed for desk work and generally is too bright for VDU work. The quality of the lighting is also important. The screen display, its colour, contrast and stability will also effect the extent to which visual fatigue is experienced. So too will the length of time that individuals work on the machine and the type of work which they do. The eye, like any other muscle, will tire if held in the same position for long periods of time.

It should also be remembered that eyestrain is not a new phenomenon brought about by VDU work. Many other industrial and clerical tasks make similar visual demands upon individuals. People who wear glasses can experience particular difficulties as regards VDU work especially those whose glasses are designed for a narrow range of reading distances or are multifocal. Such glasses are not designed to cope with work involving varying visual distances such as VDU work. Such problems can be easily overcome by modifications to the prescription and a consultation with an optician before starting VDU work can sort this out. On the question of eye testing in general for VDU users, there are differing viewpoints. Many trade unions recommend to their members that eye tests be done before starting such work and at regular periods thereafter so that any deterioration can be monitored. On the other hand, the Health and Safety Executive do not feel that the wholesale pre-employment testing of eyesight of VDU users and its subsequent reassessment is really justified. It should be remembered that under the National Health Service provisions individuals are entitled to a free eye test every two years anyway and therefore it seems a useful precaution for VDU users to avail themselves of this for two reasons. First, individuals may have eye defects of which they are currently unaware but which could be highlighted once a VDU is used because such work presents different and often new visual demands on the user. Second, it provides an opportunity for people to talk to a qualified practitioner and receive reassurance about the effect of VDU's on eyesight and advice about the avoidance of eyestrain in the context of VDU work.

Migraine

There is some concern that the use of VDU's can be particularly aggravating to migraine sufferers, specifically that the screen light/flicker might trigger off attacks. The problem here is that migraine is a generic term covering a wide range of symptoms. The known causes of migraine range from elements as diverse as specific foods such as chocolate or red wine, to low blood sugar and fatigue to light patterns. It is very difficult to say what exactly causes migraine even for particular individuals. However, paying attention to the design of the work environment, the ergonomics of the VDU itself and its software, and the design of jobs can probably go a long way towards avoiding the occurrence of such problems.

Photosensitive epilepsy

VDU work does not cause epilepsy. Some individuals who suffer from a comparatively rare form of epilepsy known as photosensitive epilepsy (1 in 5,000) may be at risk of suffering an attack when using a VDU as seizures in this form of the condition can be triggered by a flickering light source or in some cases from viewing stippled light patterns. The most likely age of onset of photosensitive epilepsy is between 10 and 14 years with most first attacks occurring before age 20. Therefore, the likelihood of someone experiencing an attack for the first time while using a VDU is extremely low.

Doctors have found that word processing presents little or no hazard but graphic displays could in theory be a problem. In an article in the *British Medical Journal*, Professor Lee states that the physical features of the stimulus of VDU work such as brightness, size of screen, frequency of picture repetition and viewing distance make it unlikely that work with VDU's will provoke an attack. However, it is wise if anyone suffering from this condition consult first with an Employment Medical Advisor from the Health and Safety Executive before starting VDU work. The British Epilepsy Association also publish a useful leaflet on the subject.

Muscle and body pain

A study by the Swedish Board of Occupational Safety and Health of operators engaged in full time sedentary VDU work revealed the following results:

- 55 per cent discomfort in their backs and shoulders
- 32 per cent felt discomfort in their head and neck
- 25 per cent felt discomfort in their arms and wrists
- 15 per cent felt discomfort in their legs

Similarly, in Britain the results of the *Health and Safety at Work* magazine survey showed that 53 per cent of VDU users experienced painful necks or shoulders, 43 per cent suffered some degree of back pain, 14 per cent got hand cramps and 58 per cent said they experienced general fatigue. Such findings indicate that muscular fatigue can be a problem for some VDU operators.

Two factors influence the extent to which VDU users will experience such muscular fatigue. The first relates to the demands of the job itself. This will influence whether the user has to sit or stand over prolonged periods of time possibly repeating the same movement over and over again. The second relates to the type of office furniture used with a VDU, in particular the chair and desk.

Normal muscular work requires the alternate contraction and relaxation of the muscles. This increases the rate of blood flow which easily removes the waste products (lactic acid) which cause the tiring of the muscle. However, if a muscle is contracted for a long time without being released i.e. held in one position, it receives very little blood and tires quickly. This happens when you get repeat movements again and again such as keyboarding, filing, sitting or standing for long periods in one position.

Since the late nineteenth century office work has been largely sedentary which often entails a stooping posture with the head advanced and the back curved. When working in such a position the stomach is often compressed against the desk which is bad for posture and the lungs and interferes with abdominal movements. Badly designed chairs and prolonged sitting can also lead to swollen feet and ankles. In a survey of office workers carried out by the Alfred Marks Employment Bureau 45 per cent of the sample said that their chair did not support their back and 34 per cent found their chair uncomfortable. When according to the Back Pain Association some 56,000 people are off work in Britain each day through back pain it seems sensible to try and avoid the problem in the first place.

The design and selection of office furniture can thus be seen as a major influence on whether individuals suffer aches and pains in the course of their work. The physical dimensions of chairs and desks are very important since they affect the posture adopted and ease of work. Any posture which is maintained over long periods creates 'static' load on the body which is much more tiring than the load created by movement. Therefore, chairs which permit shifts in posture so that the load is spread to different parts of the skeletal and muscular systems are desirable.

Highly repetitive jobs which require individuals to remain in fixed postures for long periods of time or those requiring fast repetitive movements of the hands and wrists are more likely to give rise to aches and pains than a job where a number of different tasks are undertaken and where individuals are required to move around in the course of their work. Again paying attention to ergonomic factors and job design can prevent unnecessary muscle fatigue and aches and pains occurring.

Less common and less likely to be found among VDU users are chronic musculo-skeletal complaints referred to as 'repetitive strain injury' (fondly known in Australia as kangeroo paw). Strictly speaking such conditions should be known as occupationally related upper limb disorders and they include such things as tenosynovitis, writer's cramp and carpal tunnel syndrome. Repetition of movement is not necessarily sufficient nor the only cause of such conditions. These are medically recognised complaints and should be distinguished from short term muscular discomfort. Again though attention to the ergonomics of the workplace should avoid the development of such complaints.

Skin rashes

There have been a few reports of facial skin complaints from people working with VDU's which range from itchiness to redness to distinct rashes. As yet no direct link with the use of VDU's has been made. The cause is thought to be due to either excess static in the work environment and/or low humidity. Overall the number of individuals affected is low and their cases have been solved by either reducing the static or raising the humidity levels. These can include such measures as treating the carpets with antistatic fluids, improving the ventilation to avoid deposits of particles from building up and introducing plants to increase humidity levels.

Stress

Stress is a complex issue to deal with and certainly stress and related illnesses are to be found in many occupations, not just among VDU users. There are a variety of physical and mental symptoms associated with stress and these can vary considerably between individuals. While some degree of stress can be conducive to good work prolonged stress is not. Also, each person will vary as to their own stress tolerance.

For many people the introduction of new technology into their workplace can be a stressful event and poor training provisions exacerbate this. In a Labour Research Department survey covering 17,000 workers a third of the respondents found that VDU work was more stressful than their previous working situation.

Several factors in the work situation can be stress inducing. First, the environment itself. Too little space and feeling cramped can be stressful for some individuals. Generally speaking VDU's are added on to an existing work environment and existing equipment without any heed being taken of the need for extra space to accommodate them. Poor lighting, excessive noise, inadequate heating systems and 'inhuman' surroundings can further contribute to stress. Second, the actual equipment used, its design, the user friendliness of the software, the machine response time and the number of breakdowns can – if inadequate – contribute to stress. So too can the job itself especially if it is very monotonous and repetitive, making little use of skills with the machine seemingly dictating the pace. The level of concentration required and the physical effort involved in the job are other factors which can contribute to stress. Finally, the way work is organised including such things as the standards required, the type of supervision given, the training undertaken and the extent to which an individual feels in control of their work situation can all be factors affecting the degree of stress experienced. Therefore, the more care taken in choosing the appropriate equipment, providing an ergonomically sound work environment, designing satisfying jobs for VDU users and managing the technology's introduction, the less likely it will be that the use of VDU's *per se* leads to stress being experienced at work.

Conclusions

VDU's have quite justifiably been implicated in a range of medical complaints and feelings of ill health. These, however, are all largely preventable if good ergonomic practices are followed with regard to their use. A second article *Are you sitting comfortably?* will look at what these practices ought to be and provide some practical advice on the choice and use of VDU's.

Meanwhile if this catalogue of health hazards has seemed depressing reflect again on the definition of health. It is more than the absence of disease but rather something positive – complete well being. Seen in this light the increasing use of VDU's provides a golden opportunity to improve the health of those that use them, not just by the avoidance of the hazards but by using their introduction as a time to critically review the work environment and the nature of jobs, hopefully leading to improvements in both.

REFERENCES

1. PEARCE, B. (editor) Health Hazards of VDT's. John Wiley, Chichester, 1984.
2. LEE, W.R. Working with Visual Display Units. *British Medical Journal*, Volume 291, Number 6501, Saturday 12 October 1985.
3. Health and Safety Executive. Working with VDU's. HMSO, London 1985.
4. Labour Research Department. VDU's, Health and Jobs. LRD Publications, London, 1985.
5. CRAIG, M. The Office Worker's Survival Handbook. BSSRS Publications, London, 1981.
6. NALGO. The Health and Safety Aspects of VDU Work. Health and Safety Briefing, Nalgo, London, 1986.
7. PEARSON, W. Taking Precautions. Personal Computer World, March 1986.

Pharmaceuticals – an information based industry

Angela R. Haygarth Jackson

Formerly Manager, Information Services Section, ICI Pharmaceuticals Division

The pharmaceutical industry – an introduction

The pharmaceutical industry is a high-technology, high-investment and high-risk industry. It is also a highly competitive research-based industry and a dedicated and demanding user of information. It follows that the industry is in the forefront of information science and information handling techniques which use the new information technologies, both with respect to handling internally generated data and externally published materials.

British pharmaceutical research and development (R & D) has contributed to the health of people worldwide. The country's outstanding achievements in the research field have attracted investment from many sources. In 1984 British-based laboratories spent some £500 million on R & D which is about 10% of the international pharmaceutical industry's entire R & D outlay. Also in 1984, 11 out of the 20 most prescribed medicines in Britain originated in UK research laboratories. Today, in net terms, the British pharmaceutical industry is the third largest manufacturing contributor to the UK balance of trade[1].

The industry consists of a wide range of companies which include the large research-based international groups, such as Beecham, Glaxo, ICI and Wellcome, who have manufacturing and marketing facilities in many countries of the world, their overseas counterparts with subsidiaries in the UK, and smaller domestic manufacturers who do not undertake original research and who sell generic products and traditional remedies.

The discovery and subsequent development of a major new pharmaceutical product requires an injection of the correct information at every stage. On average, it requires the testing of at least 10,000 chemical entities to identify one viable therapy. It takes 10 to 20 years or longer to develop a product for which the R & D investment can be between £50 to £100 million. A potential new medicine must pass all the requirements and interventions from the various regulatory authorities. In the market-place a new medicine will have to compete with existing medicines in the field and compete with challenges from other innovations. It has been stated that upward of 50 major disciplines are required to support the activities required by a major pharmaceutical company[2]. It follows that the information and library services must be a broadly-based business resource designed to meet the needs of such a range of disciplines.

Aslib Proceedings, 39 (3), March 1987, p 75–86 Printed in Great Britain

Internally and externally generated data and information are expensive to acquire, process and interpret in terms of intellectual effort and computing. Therefore, to exploit the information databases, most pharmaceutical companies develop systems and international networks for sharing the databases within the company, by making the information available to all appropriate geographical locations. The main focus for the collection and presentation of the information is usually based at the business headquarters of the company.

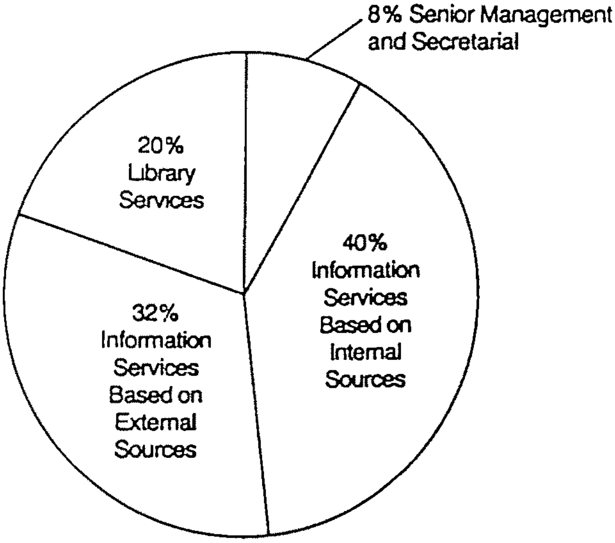
This article concentrates mainly on the sources of published information, their attributes, importance and application to the various business functions in a research-based pharmaceuticals company, with particular reference to the ICI Pharmaceuticals Division.

ICI Pharmaceuticals Division – organisation of the information services

Around 4,000 people are employed in the UK by ICI's pharmaceuticals business and 10,000 people worldwide. The headquarters are based at Alderley Park, Cheshire. The main R & D activities are located at Alderley Park; Wilmington, USA; and Reims, France. Production facilities have been developed in many overseas countries and marketing and product support is an international operation.

The Information Services Section at Alderley Park has a staff of 50 of whom more than half hold a science degree and/or a library or information science qualification. The section manages a range of information services

FIGURE 1. *Information Services Section Allocation of Manpower to Main Activities*



on behalf of ICI's national and international pharmaceutical business. Figure 1 shows the allocation of manpower to the main activities with 40% of the effort engaged in information services concerned with internally generated information and collections, 32% with information services based on external and published sources of information and 20% with library services.

The ICI Pharmaceuticals Division has three libraries and a staff of ten with four qualified librarians. The main library is known as Mereside Library and it supports the R & D activities of the division. It is in fact the second Mereside Library, because the first one built at Alderley Park proved too small and in 1972 a new purpose-built information building was opened which included as a main feature the Mereside Library. The Commercial Library supports the techno-commercial business activities and is located in the division's headquarters building and the Macclesfield Works Library particularly supports process development and pharmaceutical formulation research and development.

Information services based on internal sources

Internally generated information is the primary source of information for a product and it involves detailed data collection from the initial research, the selection of a candidate drug, the process development, the ever more demanding tests associated with safety, clinical trials, product licence approval and pre-marketing documentation and, finally, the product launch in the market-place.

It is essential to maintain organised collections of materials such as bottle stores of chemical compounds, slides, laboratory notebooks, reports, safety information, clinical trial data and document archives. Access to these collections requires very carefully designed retrieval systems and the development of special databases. By way of examples, a chemical structure handling system and two multi-purpose text handling packages are described.

The cost of synthesis of potential drug candidates is enormous and large collections of sample compounds exist. Research scientists need easy access to in-house chemical compound data and its related biological test results, to ensure that valuable ideas can be pursued efficiently. In the mid-1960s ICI pioneered a system to handle this data called ICI CROSSBOW which used Wiswesser line notation (WLN) as the mechanism for structure representation[3,4]. Most chemists are unfamiliar with WLN and CROSSBOW operated in batch mode. By the 1980s chemists needed a user-friendly, interactive system and ICI started to develop a new system called SAPPHIRE (Structures and Properties Produced by Helpful Interactive Rapid Enquiry). SAPPHIRE can be accessed directly by chemists using computer graphics to generate chemical structures and substructures to be matched against the Company Compound Centre database containing about 350,000 compounds. SAPPHIRE is designed to interface with other systems such as molecular modelling, reaction design and biological data handling. The chemical structure part of SAPPHIRE is handled by MACCS software, written by Molecular Design Ltd. and at ICI it is run on a dedicated VAX 11/780[5]. Five different ICI divisions share SAPPHIRE which now contains files relating to about 500,000 compounds. Nearly 400 end user chemists have been trained to use SAPPHIRE. The quality control of the database, including checking the machine conversion from CROSSBOW to SAPPHIRE, is the responsibility of information scientists.

In the area of text-handling, two multi-purpose computer packages are used. One is ASSASSIN which was conceived by ICI Agricultural Division and is now marketed by ICI Associated Knowledge Systems. Pharmaceuticals Division uses a special version which has operated on a Burroughs mainframe since 1972. ASSASSIN is used to index and store most company and division reports. The other main text handling system is a highly versatile and flexible KWIC (KeyWord-in-Context) package also operating on a Burroughs mainframe. It is used to index project progress reports and many special collections of documents. KWIC has proved over the years to be an extremely cheap and useful tool for generating lists and selective sub-lists using either Boolean logic operators or character string search facilitites. One KWIC database has reference to over 130,000 documents.

Extensive use is made of 16mm microfilm and the section has a microfilming unit. Internally generated documentation, especially reports and laboratory notebooks are available as microfiche as well as in hardcopy. Computer output microfilm (COM) is an economical medium for the presentation of large volumes of computer-generated information e.g. the various indexes and abstracts. Duplication and distribution of these microfilm records is relatively cheap. It has always been Pharmaceuticals Division policy to have good quality, well maintained microfilm reader-printers so that microform becomes a more acceptable format for users.

Information services based on external sources

External sources or published materials fall into a range of categories, all of which fill a vital role in information transfer. As the pharmaceuticals industry is highly competitive, speed of access to most published materials has a high priority and many products and services are designed to meet this need. In addition, the ability to determine the prior art and monitor trends makes retrospective search facilities an essential requisite. Some categories of published materials are primarily current awareness tools and others mainly for retrospective searching as shown in Figure 2.

Patent information

The patent information consists of patent specifications and all the supporting documentation, both official and commercial, which is associated with the announcement and retrieval of patent specifications. The patent literature usually provides the most recent knowledge in the field of

FIGURE 2. *Categories of Published Materials showing their Primary Importance for Current Awareness and/or Retrospective Search*

PUBLISHED MATERIALS	PRIMARY IMPORTANCE	
	CURRENT AWARENESS	RETROSPECTIVE SEARCH
Patent Information	*	*
Conference proceedings	*	*
Alerting profiles		
– batch search	*	
– online search	*	
In-house bulletins	*	
Core primary journals	*	*
Primary journals		*
Secondary services		
– manual search		*
– online search		*
Reviews		*
Books		*
Company information (on commpetitors)	*	*
Statistics (government, trade associations etc.)	*	*

pharmaceutical chemistry and innovation. The publication of a patent specification is a clear indication that someone or some organisation engaged in research has thought the technical matter described in the specification to be of sufficient importance to merit patent protection.

The main sources for the acquisition of patent specifications are the national patent offices, the British Library Science Reference and Information Service (which also operates a Patents Information Network to improve within the UK the geographical distribution and availability of patent specifications) and commercial organisations, such as Derwent Publications Ltd., who specialise in processing the patent literature. A fast patent current awareness service is an essential requirement for the research-based pharmaceutical industry. Likewise, the retrospective search systems must be comprehensive and reliable.

Conference proceedings

Conference proceedings are another source for recent knowledge in the area of medical and veterinary research and are extremely important. It is very usual for new academic thinking and ideas to be presented at conferences, symposia and seminars and the papers and resulting discussions may well trigger off a research project in a pharmaceutical company.

Conference proceedings are not always easy to acquire because of the lack of formal publishing procedures. For example, every country has a medical profession and both national and international conferences take place all over the world, on nearly every conceivable medical subject. Conferences may be organised by formal and informal medical or related groups. In addition, 'publication' may just be a handout to conference attendees, a collection of papers often limited in run numbers, or a volume which manages to be captured by the conventional bibliographic retrieval services.

Alerting profiles

Since 1971 ICI has run in-house a corporate cost-recovery SDI service using a large IBM mainframe and Canadian NRC (National Research Council) SDI software which operates in batch mode. At present the ICI subscriptions include the recent magnetic tapes from ten large commercial databases of which CA SEARCH (Chemical Abstracts SEARCH) and the ISI (Institute for Scientific Information) Source Tapes are of major interest to Pharmaceuticals Division. This is a popular service and currently the division runs about 500 alerting profiles for individual users or small common interest user groups. The search profiles are constructed by a member of Information Services Section working in close collaboration with the user.

The volume of ICI profiles and the fact that batch spinning of tapes takes place outside computer prime time makes this SDI service a cost-effective operation. Nonetheless, there are alternative approaches which companies can adopt in order to have a similar service. The Royal Society of Chemistry provides an alerting service on CA SEARCH and ISI offers two services, ASCA (Automatic Science Citation Alert) profiles which are personal profiles and ASCA Topics which reflect a common interest of several groups and have been described as a Multi-ASCA service. In those cases where an organisation has only a few alerting profiles to address to a specific database, the simplest technique is to use an online database supply service and a facility generally known as save searches for SDI. The search profile is input online and at regular intervals the online supplier matches the search profile against all items input since the last update. Offline printout is then sent to the user. Pharmaceuticals Division has some SDI profiles on databases such as MEDLINE, EMBASE and BIOSIS.

In-house bulletins

In-house bulletins are usually labour-intensive and therefore costly to compile, because they may involve scanning of materials, selection of items from different sources, abstracting and indexing. Most pharmaceutical companies prefer to buy-in externally generated information if a commercial service markets a suitable product. There is often a close association between a commercial supplier and their potential pharmaceutical company users. Such an association helps the supplier to provide a product designed to the users' needs. There are instances of bulletins and databases which started in-house but in the course of time the originating pharmaceutical companies have asked an outside supplier to take the product over and provide a commercial service. The European Documentation Ring developed a co-operative service based on abstracts of journal papers on pharmaceutical products but it became unwieldy and in due course the Ring asked Derwent Publications Ltd. to take over the service and it became the Derwent *Ringdoc* service. Similarly, several pharmaceutical companies provided in-house bulletins on laboratory hazards and at the request of IMPI (Information Managers in the Pharmaceutical Industry) the Royal Society of Chemistry now provides the *Laboratory Hazards Bulletin* and the related online database.

Nevertheless, some pharmaceutical companies still provide in-house bulletins covering areas where there is no suitable product or because by so doing the bulletin can be tailored to business needs and provide a competitive business edge. Usually, such an alerting bulletin is a by-product from an in-house database.

Core primary journals

In addition to the alerting services referred to above, most scientists and technologists regularly read or browse through a selected number, perhaps five to twenty, core journals in their area of subject interest. This browsing facility is important for the cross-fertilisation of ideas and for stimulating thinking and creativity which may lead to new innovations and processes.

Primary journals

Primary journals are a major resource and in general more importance and a higher percentage of the purchasing budget is placed on serials than monographs. Over recent years the number of unique serial titles to which Pharmaceuticals Division has subscribed averages 1,400. Each year the subscription list is reviewed and about 50 unique titles fall off and about 50 new ones come in. External loans are monitored and where more than five or six requests occur in a year for a particular journal, a subscription is considered. This on-going fine-tuning results from changing user needs, possibly associated with changes in business direction, the publication of new titles and so on. In a competitive industry, time is important, therefore, multiple subscriptions are placed for the journals that numerous people want to see as soon as they are published. In practice, multiple subscriptions are placed for about 10% of the titles and the number of copies ranges from two per title to 65.

Secondary services

The main use for secondary services is for retrospective search, as the information tends to have been published in primary sources months earlier. The basic strengths of many secondary services are broad subject coverage, resolution of language problems and deep, systematic indexing. In industry there is a decline in manual searching of secondary services, except for a quick, simple look-up query, but there is an enormous and growing increase in online searching. The advantages of online searching include a saving in scientists' search time which is a cost-benefit, quick answers to urgent questions, the ability to do complex, multi-concept searches and if necessary quickly change a search strategy, and the ability to obtain an online or offline printout which involves no clerical effort. In addition, some secondary services are only available online and there is no corresponding hard copy.

Pharmaceuticals Division accesses well over one hundred different databases every year which involves using twenty different online suppliers or 'hosts'. The most heavily used databases in order of use are *Chemical Abstracts* (both CA Search and CA Registry File), MEDLINE, BIOSIS, *Excerpta Medica* and Derwent WPI and WPIL Files.

Reviews

A good review is one of the easiest and quickest methods to assimilate general background information on a topic and the state of the art. It is for this reason that Pharmaceuticals Division subscribes to over a hundred titles in series such as 'Progress in . . .', ' Advances in . . .', 'Year book of . . .' and so on. These review sources play a very valuable role in determining retrospective information.

Books

The books that are purchased are not as a rule general purpose text-books because text-books tend to date very quickly. Book purchases include general reference works, all national and international pharmacopoeias, safety (to conform with the Health and Safety at Work legislation), business publications and works on specialised topics which are often only of interest to one or two experts.

Pharmaceuticals Division Library purchases books required by other division departments as well as purchases for the library stock. About 95% of the monographs are requested by users, usually as soon as the monograph is published. It has also been noted that apart from reference works, most monographs are read during their first six months in the library and have little use afterwards.

Company information on competitors

Most pharmaceutical companies monitor the activities of their main competitors worldwide and the industry accesses sources of specialised information. Company annual reports and related documentation are a very important source of information. Where possible a hard copy version is obtained and in other cases the *Disclosure* service on microfiche is used. Despite the development and proliferation of online business databases, clippings files are well used and they contain press releases, newspaper articles, and items on people, products, countries, etc.

The pharmaceutical industry is fortunate in that it can subscribe to commercial services (publications and databases) which are purpose designed for the industry. Such products include *Scrip* and *Pharmaprojects, Pharmline* (the drug information database produced by the National Health Service), *Pharmaceutical News Index,* and various directories (e.g. Martindale) containing company and product information. IMS International is an organisation which collects pharmaceutical business information and provides a number of services and analyses, for example, markets, sales data, companies, pharmaceutical news, advertising, and new products and their launches.

Statistics

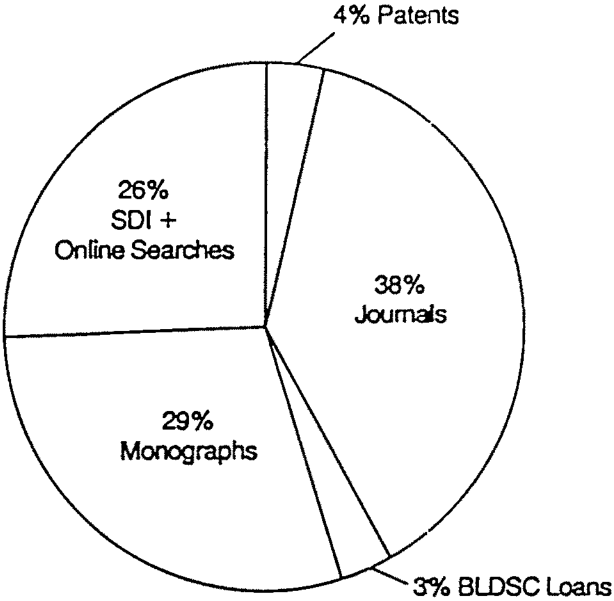
The collection of statistics such as the national and international statistics produced by governments, the World Health Organisation, trade associations and the like are often required to determine factors such as disease incidence and mortality, the composition of populations, trade and production statistics. International exchange rates both past and present are a frequent requirement. Regularly issued statistics are studied for market planning and, in particular, to show trends.

Material costs

Figure 3 shows the percentage of expenditure by ICI Pharmaceuticals Division on the different categories of purchased materials in 1985.

The purchase of patent literature is 4% of the total expenditure. Subscriptions to journals is the largest single sector and accounts for 38% of the expenditure whilst BLDSC loans, which are mainly papers from a

FIGURE 3. *Expenditure on Categories of Materials in 1985*



wide range of journals, amounts to a further 3%. The purchase of monographs is 29% and the expenditure on SDI profiles and the ever growing use of online searches is now at 26% and is just over a quarter of the total expenditure. The ratios of expenditure on patents, journals, BLDSC and monographs have not changed significantly over the last ten to fifteen years. However, online searching has become an added cost, in terms of cash flow out of the division. Nonetheless the online costs are more than justified by the saving of time, the competitive advantage, and the business opportunities the information supports. Further, the continuing exponential growth[6] of literature and information in the subject disciplines pertinent to the pharmaceutical industry requires improved access, to the sources and stores of information. This is one of several reasons for the growing trend, at least in industry, for end users to perform their own online searches.

In-house databases incorporating external information sources

Published abstracting and indexing services and the corresponding online databases do not in all instances meet the very demanding needs of the pharmaceutical industry and further information processing is required to give added value. It is quite usual for companies to develop their own in-house computer systems and databases which are tailored to the needs of the business. The main advantages are the ability to combine internal and external information, currency, special and often in-depth indexing, and the option to add an evaluation or expert comment. Ease of searching a single database, sharing and networking are advantages available through the use of the new information technologies.

Like many other companies, ICI Pharmaceuticals Division has developed an important database containing abstracts of papers in journals and conference proceedings which have been published worldwide on its products and their near competitors. The database contains about 70,000 journal items from 3,545 different journals over a period of 14 years. It is interesting to note that 190 journal titles with 50 or more postings account for 60% of the items in the database. Furthermore, 925 journals have only two to four postings and 1,550 journals only one posting. This range of scatter of relevant papers published in medical journals worldwide illustrates a problem encountered by the pharmaceutical industry. Clearly a pharmaceutical company cannot afford subscriptions to the 10,000 or more medical journals[7] on the off chance that a paper may occur relating to its product interests. Instead, the company makes full use of the secondary services to alert it to potentially relevant papers. In practice, about one-third of Pharmaceuticals Division requests to BLDSC relate to papers published in medical journals which are just outside the main international medical journals. These papers account for 17.5% of the journal items in the product database.

Libraries and accommodation

Most industrial libraries and information centres have to work within existing buildings and accommodation. At ICI Pharmaceuticals Division, three approaches have been taken in order to hold and store the internally generated documentation. These are to maintain the information in a machine-readable form, to microfilm hard copy documents, and to install mobile storage units to store essential hard copy documents and boxes of slides. The arrangement of the mobile storage units has been carefully planned and this form of storage has proved very acceptable for active files as well as for archival material.

The externally generated information need not necessarily be retained for long periods of time, because at least in theory, most of it can be acquired again in case of need from external sources. The present ICI Mereside Library has just over one mile of shelving (5,600 feet) plus a little extra shelving in a remote archive. The consequence is the adoption of the concept of the steady state library whereby the volume of stock which is discarded matches that which is acquired. Thus to maintain the *status quo* there has to be a careful and ongoing stock review both with respect to acquisitions and to existing holdings The monograph stock dates so quickly that it can be contained within a defined and constant area. Journals require a retention policy for each title. Decisions which must be made include whether the journal is to be held for say one year, three years, five years or longer. Such decisions can be based on the contents of the journals, for example, is it a journal of essentially ephemeral or long-term interest, is the subject content rapidly evolving like computer science or does it go on forever, like chemistry, and how important is the content to the business needs of the organisation. In the case of journals held for longer periods, further decisions involve whether or not to spend money binding copies or alternatively whether to buy a microform version which will meet the need for immediate access to papers. Beecham has devised a policy on the purchase of microfilm[8].

One factor which helps the steady state industrial library to operate efficiently within the constraints of accommodation, is the availability of the materials from the BLDSC and the excellent quality of service provided[9].

Conclusion

The pharmaceutical industry is a demanding user of information and information services. It develops its own internal systems and uses a broad subject range of external services. As the industry is extremely competitive, the old adage, the right information, to the right person, in the right form and at the right time is all important. Timeliness and ease of access of information is vital. The role of the information and library services within pharmaceutical companies is to design and operate services and systems which are required by their users. To ensure that users' needs are really met, it is essential that in the design of new information services and their implementation, the information staff and the users work together and that joint consultative processes and planning procedures are adopted.

Acknowledgement
The author wishes to thank members of ICI Pharmaceuticals Division, Information Services Section for their help and advice in preparing this paper.

REFERENCES

1. ABPI. *The Pharmaceutical Industry and the Nation's Health.* 12th ed. London, The Association of the British Pharmaceutical Industry. November, 1985.
2. BROWN, HORACE D. A drug is born: Its information facets in pharmaceutical research and development. *J. Chem. Inf. Comput. Sci.* 1985, **25**, 218–224.
3. HYDE, E., MATTHEWS, F.W., THOMSON, L.H., WISWESSER, W.J. Conversion of Wiswesser Notation to a connectivity matrix for organic compounds. *J. Chem. Doc.* 1967, **7**, 200–204.
4. THOMSON, L.H., HYDE, E., MATTHEWS, F.W. Organic search and display using a connectivity matrix derived from the Wiswesser Notation. *J. Chem. Doc.* 1967, **7**, 204–207.
5. ADAMSON, G.W., BIRD, J.M., PALMER, G., WARR, W.A. Use of MACCS within ICI *J. Chem. Inf. Comput. Sci.* 1985, **25**, 90–92.
6. HAYGARTH JACKSON, A.R. Access versus ownership – deciding what should be in a serials collection. *In* Cox, B. ed. Serials Monograph No. 8. Serials '85. Proceedings of the UK Serials Group Conference. Oxford, Blackwells. 1986.
7. MORTON, L.T., GODBOLT, S. Libraries and their use. *In* Morton, L.T.; Godbolt (eds). Information Sources in the Medical Sciences. 3rd ed. London, Butterworths. 1984.
8 BLICK, A.R., WARD, S.M. A microform policy to reduce the physical growth of industrial libraries. *Aslib Proceedings* 1983, **36**, 165–176.
9. HAYGARTH JACKSON, A.R. A survey of Interlibrary Lending by ICI Pharmaceuticals Division. *Interlending and Document Supply.* In press.

Telematics and retribalisation

Professor Blaise Cronin

Department of Information Science, Strathclyde Business School,
Glasgow

Telematics

The word 'telematics' derives from the French 'telematique', a neologism coined by Simon Nora and Alain Minc, authors of a report commissioned by the French government, which appeared originally as *L'informatisation de la societe* (*The computerisation of society*).[1] The report appeared in 1978 and despite its high octane intellectualism and occasional prolixity, succeeded in capturing the popular imagination. More to the point, it struck a cord with the then government and became, in effect, a blue-print for major infrastructural reform and development – development which has continued apace under successive French governments.

Telematics is a hybrid term used to describe the convergence of computing and telecommunications technologies. The term is still relatively little used in the English-speaking world, even among computer aficionados, but is beginning to insinuate itself into the vernacular, which must be satisfying for the French who are mightily peeved by our linguistic insularity. The French, of course, were not alone in noting the integrating influence of digital technologies: in language, as in science, the phenomenon of multiple or simultaneous discovery is not uncommon. Thus, there are a number of English neologisms available to describe this marriage of technological convenience – words such as 'compunications' and 'computications'.

It may be instructive to consider what Nora and Minc had to say on the subject: '(the) increasing interconnection between computers and telecommunications – which we will term 'telematics' – opens radically new horizons . . . unlike electricity, 'telematics' will not transmit an inert current, but will convey information i.e. power . . . in varying degrees, telematics will affect all of the long- and short-term aspects of the French crisis. It will affect the economic balance, modify power relationships and increase the stakes of sovereignty. But it need not be all Sturm und Drang. The authors envisage substantial increases in productivity, market penetration and performance as a direct consequence of investment in telematics. If Nora and Minc are correct, telematics will not prove to be a Pandora's Box, but a springboard to a Brave New World.

Retribalisation

The use of the word 'retribalisation' in the title of this paper is an allusion to the writings of Marshall McLuhan, whose free-form logic and

Aslib Proceedings, 39 (3), March 1987, p 87–95 Printed in Great Britain

idiosyncratic style had a profound influence on communication theory, particularly during the 1960s. McLuhan was writing before the advent of digital technologies, but developed a powerful vision of how the new communication technologies would reshape social structures. The following quotation from *The Gutenberg Galaxy* illustrates the character of his thinking: '... the vast network of electrical communications which now links the distant corners of the earth has created a collective cosmic analogue of the human brain. Instead of cogitating in the solitude they once created for themselves under the influence of print, men can now think together through the permissive medium of a synthetic nervous system that surrounds the globe'[2]. What McLuhan seems to be saying is that electronic communications networks have rescued us from scriptural solitude and plugged us back into a scaled-up tribal society. At the risk of simplifying, he believed that television had restored our collective tribal identity – an identity which had been undermined by the advent of the printing press – by at once internationalising and domesticating events, attitudes, experiences, fashions and behaviours.

If that was true for the 1960s, it is much more so today. The pace of technological development in the last twenty years makes it difficult to resist the feeling that the Age of Telematic Man is dawning. Orders of magnitude improvements in miniaturisation, processing power, storage capability, transmission speeds and system reliability, coupled with falling unit costs and mass market penetration have brought computing and telecommunications into people's living rooms. The personal computer has in a matter of a decade or so become a ubiquitous and (to a greater or lesser extent) essential chattel of everyday life. It is not hard to see why this has come about: 'If the motor car industry had progressed at the same rate as computer technology since 1945, a Rolls Royce would now be as cheap as a paperback novel; more powerful than the world's fastest train; could go round the world 3,000 times on a single tankful of petrol; and would be so small you could park eight of them on a pinhead'[3].

If there is no ceiling to the spiral of successive sophistication, the Rolls Royce model which adorns the car showroom of the year 2000 will be a potent piece of automotive engineering. By the same reckoning, the IBM PC of the year 2000 will be an awesome piece of technology. Already, there is serious talk of the first generation 'metacomputer', which will be vaguely anthropomorphic in character. The PC of the year 2000 may well be hand-held – indeed, it may even be silicone implanted, thus giving new meaning to the concept of portability!

Linear and lateral growth

However, as Barry Jones, erstwhile TV quiz show host, author of *Sleepers, wake!* and sometime Australian Minister of Science & Technology, rightly observed: 'Machines are doubling their intellectual capacity every few years, but people are not'[4].

The development of a new generation of intelligent machines would, in theory, seem to suggest that there need not be limits to technological growth. What homo sapiens cannot do, his hyper-intelligent computer will do for him by exploiting customised, resident software which captures and profiles the needs, wants and desires of its 'master'.

That said, it is worth asking whether relentless linear growth always makes sense. Just as there is little practical point in designing cars which can travel at 190 mph when speed restrictions of 70 mph are the norm, there would seem to be little point in increasing, say, data transmission rates simply because it is technically feasible. Jones may be right when he says that technological development may, in some instances, be approaching asympote – in the sense of a flattening out of the curve after a long exponential rise. In the years ahead, we may well see less linear and more lateral growth.

Putting it crudely, there are two schools of thought: the 'if it can be made, let it be made' and the 'if it can be made, need it be made?'. This can sometimes be expressed as 'technology push' versus 'demand pull'. It is not difficult to think of premature or stillborn technologies (e.g. the videophone) which sit forlornly gathering dust because they were ahead of their time or too sophisticated for the intended market. The view, nonetheless, persists that if something can be created, a demand for that product or service can also be created. As Ivan Illich observed, 'if a moon vehicle can be designed, so can the demand to go to the moon'[6].

Manipulative and convivial institutions

For Illich, institutions (public and private sector) lie on a spectrum. Their position on the spectrum is a function of the degree to which they are, to use his terms, manipulative or convivial. Highly manipulative institutions he labels 'right-wing'; highly convivial 'left-wing'. He is scathing about right-wing institutions, under which, one imagines, he would include many of the major players in the global information industry. The characteristics of right-wing or manipulative institutions are complexity, market-orientation, high production costs and intensive advertising. Convivial institutions (such as libraries) attract spontaneous use from the public at large, whereas their manipulative counterparts create artificial demand, addiction and consumer dependence.

Stimulating though Illich is to read, there is a feeling that he has perhaps been over zealous in dividing social reality into two realms – the acceptable and the unacceptable. One of McLuhan's vices was a fondness for large-scale dualisms and dextrous juxtapositions. And, yet, it is not just the academic community which is prone to this tendency. All of us, to some extent, fall into this trap in our daily and professional lives.

Our worldviews, psychological landscapes and professional rhetoric are undergirded by binary lines, polar opposites and handy dichotomies. The partitioning of reality into black and white helps structure our thinking: it provides us with conceptual co-ordinates to which we can refer without a great deal of effort. Like computers, we have developed a machine language of our own – a binary system based on opposites and antinomies.

The linguistic kit-bag we carry through our professional lives contains a formidable collection of lexical opposites: pre-industrial and post-industrial; labour-intensive and knowledge-intensive; massification and de-massification; information rich and information poor; institutionalised and de-institutionalised; bureaucracies and networks; centralised and de-centralised; free and fee-based.

Strictly speaking, this litany of buzz words constitutes a distortion of the truth. Some of these paired terms are not opposites, but fuzzy points on a wobbly continuum. They do, however, serve a useful purpose in that they highlight issues and function as hooks on which to hang our prejudices. The drawback of professional shorthand of this kind is that we run the risk of believing that the substantive issues behind the rubrics can be reduced to the intellectual level of a tabloid editorial.

Consider, for example, the poverty of much of the current debate surrounding the issue of charging for public library services. This is an important matter; one deserving of serious and dispassionate analysis. To date, however, the debate has been propelled more by rhetoric than reason, with many of the fundamental issues being overlooked in the effort to defend a particular ideological position. There is a lot to be said for the idea of a 'freischwebende Intelligenz' (a socially unattached intelligensia), which could be wheeled in to deal with contentious issues of this kind – a sort of ACAS for intellectual/ideological disputes.

Technocratic change

But back to Telematic Man. In the early part of this century there was a veritable efflorescence in the arts world. Dadaism erupted in France; the Futurists launched their manifesto in Italy; Schoenberg tinkered with tonality; the Cubists deconstructed and reconstructed form; literature adventurously decoupled itself from tradition and *ideès recues*. However, another, more dramatic, bouleversement was waiting in the wings.

When Alvin Toffler's book *Future shock*[6] was first published in 1970 it became the highest priced paperback on the market at that time. Despite its complex subject matter, style and retail price, it became a phenomenal best seller. Toffler had tapped a nerve. *Future shock* succeeded with great *èlan* in describing the dynamics of an imminent socio-technical revolution, in which the entire technocratic base of industrialised nations would be restructured.

Toffler popularised an approach known as social wave front analysis: an approach which views history as a succession of rolling waves of change and asks where each wave is carrying us. The appeal of this approach is that it allows the analyst to throw into relief fractures and discontinuities in social progress. In his follow-up book, Toffler explored the significance of the third wave (the information revolution) and attempted to delineate the distinguishing features of post-industrial societies[7].

Post-industrial society is the milieu in which Telematic Man functions. But what else can be said about his natural habitat and what kinds of kinship structures bind members of the tribe?

The landscape or context we are alluding to can be viewed from a number of vantage points, with the result that different observers will focus on, or emphasize, different aspects – a fact borne out by the various umbrella terms in common use (e.g. the information age; micro millenium; wired society; knowledge society; information economy; computer age; information society; post-industrial society; leisure society). However, the common denominator is an awareness that successful economic functioning is inextricably linked to the effective management of information resources at both the social and personal level.

Perhaps the easiest way to summarize what is meant by post-industrial society is to say that labour is being, on the one hand, intellectualised and, on the other, automated. Machine intelligence and knowledge management capability will be central in accelerating the transformation from an industrial to post-industrial mode of economic functioning, as will the creation of a 'new cognitarait' to fuel innovation and creativity. Technology will continue to cause occupational displacement, but, to some extent, it will facilitate new job creation, especially in the tertiary and quaternary sectors of the economy. In effect, an increasing proportion of the workforce will be involved in activities which entail the processing and handling of information in one way or another.

Coping with complexity

So, what is new? Have not societies always had individuals or groups responsible for information handling and has not information control always been at the heart of organisational and social management? The answer to both questions is affirmative, but the difference today has to do with scale. There is a considerable difference between a Cray super computer and a cuniform tablet; between a communications satellite and a stage coach. But there are other important differences to take into account.

Populations have grown; social structures have become immeasurably more complex; international trade has become much more competitive; government regulations have multiplied at a dizzying rate, and the stock of social and recipe knowledge is expanding at an unprecedented rate. More than ever, successful social functioning is contingent upon an individual's ability to diagnose his information needs, respond to others' demands for information, and identify, access and exploit appropriate sources of information.

Growth of this kind can be dysfunctional, causing decisional overload, social stratification and anomie. To cope, society needs increasingly sophisticated information support and analysis systems to deal with the deluge. But often these are not enough. Recall what happened to President Reagan in his first televised debate with Walter Mondale in late 1984: his advisers had stuffed his head so full of facts (facts which we might naively assume to be within the grasp of a president) that he 'popped his circuits', to quote one of his aides. Society's collective cranium is now so clogged with information that it sometimes appears to suffer from decisional paralysis. Filtration rather than further fuelling of the information explosion is what is needed.

Unfortunately, the same technology which helps us manage the flow of information is responsible for increasing the volume in circulation. Technology has commoditized information and made it attractive to the manipulative sector. We talk routinely of information as a 'tradeable commodity' and of countries as net importers or exporters of information. In the space of a few years, information has been relocated from the convivial to the manipulative sector.

The Matthew Effect

The new-found awareness that information is a resource, that it can be traded in the marketplace, and that it confers competitive advantage has come as something of a revelation in certain quarters. It has also highlighted latent tensions between the public and private sectors in respect of the delivery of information goods and services. Achieving the necessary blend of regulation and stimulation so that commercial gain and social utility receive appropriate recognition is not a simple matter and will increasingly occupy the minds of policy makers and information industry players alike.

Unfortunately, as with the earlier example of charging, the library profession has approached the question of sectoral interaction by sending up a smokescreen of defensive rhetoric. Being rude about the commercial sector will not make it go away, but by the same token there is a very real need to ensure that adequate mechanisms exist for accessing public domain information. The progressive commercialisation of information and the growing trend to concentration and vertical integration in the information industry are creating a host of new and complex problems for policy makers in both developed and developing nations[8]. If access to information is predicated on the ability to pay rather than social need, then those who are in a position to pay will derive most benefit. If, as Nora and Minc suggest, information is power, then it seems reasonable to conclude that those with the wherewithal to pay will be in a position of relative power. It is not difficult to see the Matthew effect coming into play: 'Unto every one that hath shall be given, and he shall have abundance'.

The operationalisation of the Matthew effect will create a new form of social stratification: the information rich and the information poor – to employ one of the instant opposites cited earlier. This sort of language throws the problem into stark relief, but it also encourages us to think simplistically: in terms of two tribes – the 'haves' and the 'have-nots', or to put it another way (since we are essentially talking of electronic information services) Telematic Man and pre-Telematic Man.

Computopia

A little more about Telematic Man's habitat- 'computopia'. For the moment, the concept of the wired city ('computopolis') is more of a literary flourish or futurologist's fantasy than a concrete and optical fibre actuality (pace Tama New Town in Japan and Milton Keynes). This is not the fault of the technology: you can lay optical fibre cables as far as the eye can see; you can launch communications satellites till there is not a parking slot in sight; you can erect extremely 'smart' buildings and design state-of-the-art teleports in every major city, but this will not guarantee that people's behaviour will alter accordingly.

Some years ago, Columbus, Ohio was the testbed for the QUBE interactive community information system. It offered the domestic user an array of electronic facilities and employed advanced technology, but it failed to catch on even among affluent middle class Americans. Having invested millions of dollars, Warner Amex Inc. pulled the plug and wrote off its substantial losses. Since then there have been perceptible changes in the mood and receptivity of the domestic market to electronic information services, but even today the gulf between the actual and the possible is considerable.

Telematic Man is something of a Jekyll and Hyde character. At home he is happy to play with his personal computer (the launch of the Amstrad has finally conferred commodity status on the pc), but he is not 'into information'. At the office things are different: Telematic Man is surrounded by gleaming kit and routinely taps keyboards, reads off a VDU, fires messages down the line and conjectures electronically with his favourite decision-support software.

Thirteen per cent of UK homes may boast a pc, but that in itself does not constitute the conditions for the telematicisation of society. Attitudinal and behavioural transformation has to go hand-in-hand with technical change. France is certainly trying to create a telematic infrastructure, but there is still a long way to go before that goal is attained. Elsewhere the horizon is even more remote. Despite all the optimistic forecasts, teleworking/telecommuting is still very much a minority activity. Teleshopping and telebanking have an obvious appeal, yet remain the preserve of a few. Telecommuting, teleshopping, telebanking and teleconferencing should not be seen as replacements for traditional modes of behaviour, but as complementary facilities. If telefunctioning is really to take off, telebanking and kindred activities will have to 'piggy-back' on something of more fundamental importance to the domestic market.

Teleliving

People, as well as seeking convenience and efficiency in communication, require social intercourse and feedback. Weekend shopping at the hypermarket is more than a stockpiling exercise: it is an occasion for interacting with the environment and members of the local community. Teleshopping eliminates the hassle of parking, trolley pushing, queuing and similar miseries. It also homologises and de-animates. To some extent, it impoverishes. Is an electronic flea market (such as the enormously popular video auctions in the US) preferable to the Portobello Road on a sunny Saturday morning? Instead of re-tribalising, teleliving can, in some cases, dislocate individuals from the primary tribal structure. Ritual is an important element of tribal life, and, for many, weekend shopping is both a functional and ritualistic activity.

Others, however, may wish to act out the part of Telematic Man more convincingly – computer freaks, information junkies, screen addicts ... the various progeny of a blip culture who will be satisfied with computer-based vicarious living. This group, contrary to what has just been said, may cohere to form a dispersed, loosely articulated, but culturally homogeneous telematic sub-tribe living on the digitised fringes of society. But can electronic gossiping, hacking, computer shopping and telecommuting provide sufficient social polyfilla (what sociologists call intersubjective sedimentation) to hold the sub-tribe together?

The telematic revolution may not have impacted greatly on the life of the highland crofter, but it has quite profoundly affected the work-a-day lives of commodity brokers, travel agents, publishers, secretaries, draughtsmen and librarians – to name but a few. Telematics can confer independence on individuals and encourage individualism, networking and de-massification, but equally it can encourage concentration of control and ownership of key utilities (telecommunications networks; databases; communications media) in the hands of a powerful oligopoly. Technical change on a grand scale brings about changes in social mores and psychological environments. In certain cases, telematics will have an integrative, centripetal influence and create a sense of tribalism restored; in others, the reverse seems more likely – alienation, fragmentation and marginalisation.

Perhaps what McLuhan was alluding to was not a process of technology-induced tribalisation, but miniaturisation – the miniaturisation of collective experience caused by the TV screen, the loss of sense of time, and loss of sense of distance. Both the TV screen and VDU divorce events from their social and historical contexts and immunise individuals against reality. Excessive use may, as Illich suggests, lead to screen addiction, but selective use can perhaps provide a means of creating a new sense of global brotherhood. The net effect of the telematics revolution, then, may be to generate anomie and tribal coalescence in more or less equal measure across society. But that is a rather limp conclusion. The question surely is, 'what can be done to facilitate telematic transformation and optimize the social benefits?' More specifically, 'what can government do to engineer appropriate change?'

The Giscard government recognised that 'telematique' and 'bureautique' (office automation) could contribute positively to French internal development and export performance and accordingly set in motion various state-subsidised actions to provide the country with an appropriate infrastructure upon which to build (the development of the Minitel system being a case in point). Likewise, the Japanese have long since recognised that support for the information industry sector is crucial to the development of a robust national industrial policy[8]. Both these countries, though favouring different strategy sets, have espoused a telematic vision and are prepared to invest to make that vision a reality. The same can scarcely be said of the UK. The UK does not have a vision. There is no national information policy (qua policy) and responsibility for *de facto* information policy is scattered across numerous government departments. One heartening development, however, has been the establishment by the ESRC of its Programme on Information and Communication Technologies (PICT), but only time can tell whether this (by UK standards) ambitious initiative will succeed in filling the policy vacuum. In the meantime, we bumble along.

REFERENCES

1. NORA, S. *and* MINC, A. The computerisation of society. MIT Press, 1981.
2. MCLUHAN, M. The Gutenberg galaxy. Routledge & Kegan Paul, 1962.
3. MEGARRY, J. Computers mean business, Pan, 1984
4. JONES, B. Sleepers, wake!: technology and the future of work. OUP, 1982.
5. ILLICH, I. Deschooling society. Penguin, 1973.
6. TOFFLER, A. Future shock. Bantam, 1979.
7. TOFFLER, A. The third wave. Bantam, 1981.
8. DAVENPORT, L. *and* CRONIN, B. Vertical integration: corporate strategy in the information industry. Online Review, 10(4), 1986. 234–247.
9. DIEBOLD, J. Business in the age of information. Amacom, 1985.

Who cares if you've got problems finding staff or a job?

Aslib Professional Recruitment does - and we're only a phone call away.

If you need to recruit or replace staff or if you're seeking your ideal job within an information unit – we know what you're up against Time Time spent waiting for responses to advertisements and applications Time spent sending or receiving courteous rejections More time than you can afford.

Aslib Professional Recruitment understands We know you need your problem solved quickly and efficiently, and we can meet that need – now All you have to do is call us

A tailor-made shortlist in 24 hours.

Whatever your requirements for permanent or temporary staff, Aslib's recruitment service can put a realistic shortlist of candidates on your desk by this time tomorrow We have a "live" file of information personnel representing all levels of qualifications and experience, who are seeking career opportunities From this file we will select those applicants most suited to your needs

Free, confidential service to applicants.

Whatever your qualifications or experience in information handling, we can help you to find the right job in the shortest possible time Your application will be treated with the utmost confidence and our service comes to you completely free

Round-the-clock answering service.

Whether you're recruiting staff or contemplating your own career move, Aslib Professional Recruitment Ltd cares about bringing you and your potential employee or employer together to your mutual advantage

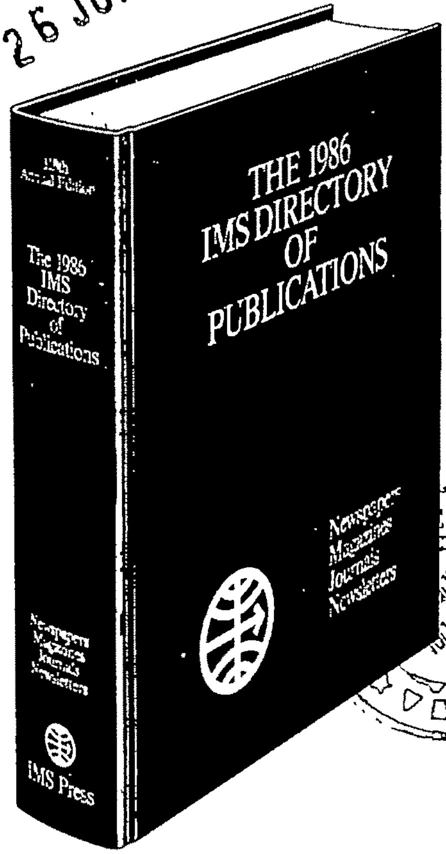
Our 24 hour answering service will take your call out of office hours on 01-404 0334 If you prefer to phone during the day ring Alice Gittoes on 01-430 2671, or write to her at Aslib Professional Recruitment

Aslib

Professionals in Information Recruitment
Aslib, Information House, 26–27 Boswell Street, London WC1N 3JZ
Telephone 01-430 2671

Gale Research is proud to announce the acquisition of

26 JUN 1989


THE 1986 IMS DIRECTORY OF PUBLICATIONS
Newspapers Magazines Journals Newsletters
The 1986 IMS Directory of Publications
IMS Press

The IMS Directory of Publications

(formerly **Ayer Directory of Publications**)

Gale Research Company has recently acquired the **IMS Directory of Publications**, the longest continuously published directory of magazines, newspapers, and other periodicals, and will continue fulfilling orders for the 1986 edition as well as the 1987 edition which is scheduled for publication in March 1987.

The current edition furnishes details on more than 10,000 newspapers and 12,500 magazines published within the United States, Canada, and Puerto Rico. Eleven special sections provide such information as Newspaper Feature Editors, Foreign Language Publications, Agricultural Publications, and much more.

In future editions, Gale will enhance the format and coverage of the directory and its indexes and will introduce a supplement service to the main volume for added currency and comprehensiveness

***For Fast Service* — Order Tollfree: 800-223-GALE**
Available on 60-day approval Send check with order and receive a 5% discount
Place a Standing Order for an additional 5% discount Customers outside the U S and Canada add 10%

Gale Research Company • Book Tower • Detroit, MI 48226

Aslib
PROCEEDINGS

Volume 39 Number 4 April 1987

Are you sitting comfortably? 97
Noreen MacMorrow

Building the Domesday database – lessons for integrated database development 107
Richard Tapper

Polytechnic libraries and academic research: a case study from Brighton Polytechnic 123
Michael Heery

Pilot study of the value of secondary information: discussions from the viewpoints of information providers and users 135
Aatto J. Repo

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **APRIL 1987** **Number 4**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib, Annual subscriptions to non-members: £65 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, *Aslib Proceedings,* Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Are you sitting comfortably?

Noreen MacMorrow

Department of Information Science, University of Strathclyde, Glasgow

Introduction

A recent article (*Aslib Proceedings*, March Vol. 39, No. 3) 'Do VDUs make you sick?' dealt with the possible health hazards which the misuse of visual display units (VDUs) can cause. These hazards are:

- eye strain and visual fatigue
- migraine
- muscle and body pain
- skin rashes
- stress

This article sets out some guidelines for the choice of VDU equipment, its positioning in the work environment and use. By following these guidelines the prevention of hazards from VDUs should be possible. Good ergonomic practices not only prevent a deterioration in the health of VDU users but, if correctly applied, can enhance the quality of working life.

Ergonomics (derived from the Greek word for work) is generally accepted as meaning the science of designing machines and environments best suited to the efficiency, comfort, safety and peace of mind of the workers. In its broadest sense it encompasses not only the machines and the immediate work environment but software and job design. Applying ergonomic principles to the use of VDUs can add to the costs associated with their introduction to the workplace, especially where major changes to the environment are concerned. Their application also requires considerable time deciding on what is necessary and implementing these decisions. Why bother in that case? Many people believe that the fuss about the possible health hazards of VDUs is a storm in a teacup, a reaction to technological change which will peter out.

Such an attitude is blinkered. The health hazards are apparent and very real. Unless the equipment is properly designed, installed and used, many more people will suffer ill effects as the use of VDUs increases. What about the costs of ill-health such as increased absenteeism, people operating below capacity and low morale? Such costs are not so easily quantified but they too are real. Furthermore, it is argued that reaping the benefits of new technologies, many of which incorporate VDUs, will only come about when individuals use the equipment creatively – they are unlikely to do so if the equipment makes them ill.

Many of the ergonomic practices recommended for the work environment and job design also have applicability to non-VDU work. The use of

Aslib Proceedings, 39 (4), April 1987, p p 97–105. Printed in Great Britain

VDUs is bringing into the open the fact that many working environments are less than adequate from the point of view of health (in the broadest sense) and that many jobs are not 'designed' at all but rather evolve, often in a haphazard way. So applying ergonomic principles can benefit both VDU and non-VDU users alike.

There are many checklists available of ergonomic standards for VDUs. However, the problem with some of these is that they use technical language which can be confusing for the non-technically minded. These checklists can be helpful though, when choosing a VDU, as the manufacturer's specification can be checked against the recommended standards – if you can get such a specification in the first place. Checklists can also be useful in negotiations about the use of new technology. However, the danger here is that people get so caught up in the nitty gritty of the checklist that they forget what its general thrust should be – at the minimum, the application of the machines in such a way as to ensure hazards are avoided and, if possible, to improve the working environment.

There is a story of a trade union and management engaged in negotiation about VDUs, trying to agree on the refresh rate that the screens should conform to – the trade union said 60Hz the management said 50Hz. In the end, like any good negotiation, they reached an acceptable compromise: 55Hz. All well and good – except that none of their equipment ran at that rate! By becoming so enmeshed in the detail they had forgotten the thrust of the checklist, in this case to ensure that the image on the screen was stable and without flicker.

For these reasons the 'checklists' or recommendations here are in non-technical language and concentrate on what are thought to be the most salient points when introducing and using VDUs. The recommendations are in several parts. First the VDU itself is discussed with its components of screen and keyboard. The key features to look for in these are highlighted together with an explanation of why such standards are important. Then the article moves on to discuss the immediate workplace and the siting of the VDU, together with the more general environment within which it should operate. This is followed by a section on software ergonomics and job design, which are believed to be important for both the physical and psychological well being of the VDU user. Finally, there is a section on managing the introduction of new technology to the workplace, with special emphasis on the role of training.

The VDU: screens and keyboards

The characteristics of the screen used with a VDU will have an important influence on whether users suffer from eyestrain and visual fatigue. Fundamental to the screen is adjustability so that individuals can adapt the technology to suit them and not vice versa. Adjustability refers to the positioning of the screen; it should be easy to swivel left and right and to tilt up and down, so that the most comfortable position for the user can be determined. Ideally, the screen should be positioned at or below eye level to avoid straining muscles by constantly looking up at it. Anti-reflection treatments or the provision of an anti-glare filter can reduce the possibility of eyestrain from glare. Another aspect of adjustability concerns the image on the screen. There should be accessible controls for brightness and contrast. Users should be shown how to use them. There are many anecdotes of VDU users working with badly contrasted screens for many months because they didn't realise that the contrast could be adjusted.

The colour of the screen is largely a matter of personal preference and it is hard to be dogmatic about this. The Health and Safety Executive give a general recommendation of white, yellow or green characters on a neutral background. More important for avoiding eyestrain are the display characters and stability. The image should be stable for the operator. All VDUs flicker to some extent but there seems to be differences between individuals regarding their threshold of awareness of flicker. The characters on the screen need to be of adequate size and of good presentation. They should be easy to read, clearly formed and well defined. Some screens have poor definitions whereby B can look like 8, U like V and 5 like S. Such displays make proof-reading onscreen very difficult and tiring for the user.

Keyboards are a very important part of a VDU since the dominant form of person-machine interaction with computer systems is via this device. Keyboards should be detached from the screen so that the user can move them around on the work surface to find the best position for them. They should be stable and well balanced so they don't slide around the desk top when the keys are pounded. Basically, the shallower the slope on the keyboard and the thinner it is (height above the desktop), the less likelihood that excessive loads are placed on the hands and the arm, thus muscle ache or strain is avoided. Also, unnecessarily wide keyboards should be avoided as these can lead to fatiguing of the neck-torso when the user reaches for work lying on the desk beside it.

The layout of the keyboard can affect its ease of use. The alphabetic keys should follow the standard QWERTY layout as this is familiar to most users. If the task requires substantial keying in of numeric information, then a separate numeric pad should be present on the keyboard, either to the left or right of the alphabetic keys, depending on whether the user is left or right-handed. Function keys which perform specific tasks, are useful on the keyboard but they should be clearly differentiated from the alphanumeric keys either by size/colour or both.

The keys themselves should aid accurate location by the finger top – square keys with a concave top are ideal for this purpose. The legends – (what is printed on the key) should be legible, moulded onto the key surface to resist wear and abrasion, with no more than two legends on any key as this will only confuse the user.

It is important to cut down glare by ensuring that the surface of the keyboard is matt finish and that the keys are low reflective. One final point about keyboards concerns feedback. Keyboarding is a complex process whereby the movement of the hands and fingers are activated and controlled by signals from the brain in response to a variety of stimuli. Some kind of feedback from the keying in process is necessary to inform the operator that the intended action has been taken and to aid the detection of errors. Keyboards should, therefore, provide some kind of auditory and/or tactile feedback to the user.

The correct design of screens and keyboards can help reduce the possibility of eyestrain and/or muscle fatigue. Good design can also help to ensure that the user gets psychological satisfaction from using the VDU and thus minimises stress.

Siting the VDU: peripherals: furniture

The immediate working environment in which the VDU is sited is an important influence on whether users are comfortable in their work. VDUs are usually placed on existing desks. People often forget that the screen and keyboard together with peripherals such as disk drives and printers take up a lot of room – they are usually an addition to existing equipment rather than a substitute for it. The Central Computing and Telecommunications Agency (CCTA) estimate that up to 75 per cent extra space can be required when VDUs are introduced. Items should be positioned for the user's convenience and in such a way to avoid unnecessary stretching and possible strains when seeking frequently used materials.

Printers can be a particular problem because of the noise factor which can break concentration and increase stress, especially if large amounts of printing are undertaken. Unless they have an acoustic hood they should be sited away from the user except when only an occassional item is printed out. The provision of a simple document holder can greatly ease input of material on the VDU and avoid strain to the neck-torso as users peer at documents on the desk top. These holders should be non-reflective and matt paper should be used, again to cut down on glare.

The desk should ideally be adjustable so that users can position the VDU and themselves at the correct height for working. The desk top should not be so high as to cause hunching of the shoulders. For keyboarding a lower desk height is needed than for writing. There should be adequate knee clearance beneath the desk and small users should be provided with a footrest. Desk tops should also be matt to cut down on glare.

Chairs are perhaps the single most important item in the prevention of back pain. It is extraordinary that many people spend thousands of pounds on VDUs and then use them with cheap and nasty chairs which do not adequately support the spine. The best type of chair is a swivel one with a stable base. The seat height should be adjustable so that when seated the user's feet are firmly on the floor (or footrest if small). The chair should also have a backrest which supports the lumbar region of the back (the lower back). This backrest should also be adjustable both for height and for moving backwards and forwards. It should be curved to avoid catching on the shoulder blades. Users need to be shown how to adjust this furniture to take advantage of its flexibility.

Two other points about the immediate working environment of the VDU are worth making. The first concerns wiring. Computers seem to spawn a spaghetti-like mess of wires. These need to be carefully laid so that they do not trail or hang where they may cause an accident. Power points should not be overloaded and the use of extension boards is to be avoided if at all possible as they add to the proliferation of wires. Some of the newer desk furniture for VDU work contains channels for wires though these can be expensive. The second point concerns the level of concentration required for some types of VDU work. If it is very high then the user may need to be positioned away from others and from noise. The normal office environment with phones, copiers, keyboards and people talking can be noisy and partitions which deaden the sound may be necessary, especially in open-plan offices.

The general work environment: thermal and visual

The main point for VDU work and, indeed, other forms of sedentary work, is that the environment should be draught-free, with a comfortable and stable temperature. Like other types of machinery, VDUs generate heat and, particularly in warm weather where several VDUs are operating, this can cause problems of excessive temperatures which may lead to drowsiness or irritability. To avoid this there should be adequate ventilation and reasonable humidity. The latter is necessary to avoid skin itchiness and possibly rashes or facial dermatitis and dryness/irritation of the eyes. Generally, most offices are too dry. Humidity and adequate ventilation will also reduce static in the environment. Excessive static has been implicated in facial rashes as well as causing unpleasant 'shocks' to individuals. Antistatic treatment of carpets in rooms with VDUs further reduces this problem.

The visual environment around the VDU can, if poorly designed, be one of the biggest factors contributing to eyestrain in VDU users. Desk illumination for VDU work should be below that of the normal office environment to cut down glare. However, some local task lighting in the vicinity of the machine may be necessary to facilitate the reading of source documents.

Not only is the quantity of light important, so too is the quality. The best type of artificial lighting is a totally illuminated ceiling with the lighting diffused to reduce glare. An alternative suitable for VDU use is 'up lighters' which bounce the light up off the ceiling. Lighting should also be adjustable so that individuals can set their own desired level of illumination. The positioning of the VDU in relation to the light source is also important to reduce glare. They should be placed between, rather than under, rows of lighting with the line of sight parallel to the light fittings. VDUs should also be placed parallel to windows for the same reason. Glare from windows can be reduced by the use of blinds, curtains or even light absorbing film. Where possible, non-reflective surfaces should be used in the room where the VDU is located – muted matt colourings on the walls can reduce glare and provide a restful work environment.

Software ergonomics and job design

If a job involves the use of a VDU then it will involve user interaction with software. The cognitive interface can determine how an individual reacts to working with a VDU and in particular, how stressful they find their work. Software ergonomics covers such things as how information is presented on the screen to the user, the way information is entered, the sequence in which tasks have to be carried out, the type of error messages which are given and the response rate of the system.

Poorly designed software can be frustrating for the user, lead to increased training time, increased error rates and even to the abuse of systems. 'User friendly' is a much maligned term with regard to descriptions of software. As one VDU user put it, software can be about as user friendly as a cornered rat!

The level of experience of the user is also an important factor influencing their response to software. Menus are often useful for novices as they set out the choices clearly in plain language and take a step-by-step approach. But as the user gains in confidence and experience they may want to be able to bypass some menus to perform the task they wish to undertake. Some software is flexible enough to allow this but some menus must be laboriously gone through each time, leading to frustration and stress for the user.

Ideally, the software chosen should be specific for the type of tasks which the user wishes to undertake. It should have a good screen format and presentation which enable the user to see at a glance what is going on. In some software packages the screen is cluttered, in others, especially where colour is used, the clarity of the information is lost amid the multifarious colours used.

Software should be relatively easy to learn and easy to use, although the two are not necessarily always compatible. Those very features which make a package easy to learn can become frustrating once the user has gained the skills necessary to manipulate it. Easy to learn does not obviate the need for proper training either. While self teaching can be a useful method for some people, it is not always efficient either in terms of the time taken or, more importantly, the kind of understanding and methods of use of the package which the user ends up with. Error messages are another important feature of any software package. They should be intelligible – in a form that users can understand – and informative, ideally explaining why the error occurred and how the user can correct it.

Manuals are another aspect of the cognitive interface which can prove frustrating to the user. They should be well-written avoiding jargon as far as possible. They also need to be well indexed so that the user can find the appropriate section quickly. The sheer bulk of many manuals is enough to put many users off! Finally the response time of the system is important.

For many users it is not the length of time that it takes for the computer to do something that they find frustrating, (and this is often dependent on the hardware) but not knowing what is going on. Software which gives messages to the user even if it is only PROCESSING PLEASE WAIT are infinitely more desirable than those where the screen goes blank, or everything stops and the user wonders 'what have I done?'

There are now a wide variety of jobs which require or incorporate the use of VDUs. A common distinction made is between those jobs where people work *with* VDUs, where the VDU is seen as yet another tool to help them in their main job function, and those jobs where *people work at VDUs* – VDU operation is the job and the user is paced and controlled by the machine. There can be an important difference in attitude between those who use a VDU out of choice and those who 'have to'. Acting as a terminal minder can be as boring as working on a production line. There is also considerable mounting evidence to indicate that people who work *at* VDUs are more likely to suffer from physical aches and pains and stress in their job than those who work with the machines.

Whether a job is one where the individual works *at* or *with* the machine is largely a question of how that job has been designed or indeed not designed. In considering the design of jobs involving the use of VDUs the following factors are useful to bear in mind. Firstly, there should be a mix of VDU and non-VDU work, preferably some which enables the person to get up and move around. The content, frequency and sequence of the tasks done on a VDU need to be considered. Doing many boring repetitive things is likely to be just as stressful and frustrating as doing one. Jobs should contain some variety, a variety which enables different skills to be acquired and exercised. The concentration level and physical effort involved need to be considered, so a change of work or rest breaks can be instituted if necessary during the day. Finally, jobs should provide some potential for self development and job satisfaction and these obviously will depend on the individual's own preferences and needs which should be taken into account.

Managing the introduction of VDUs: training

The introduction of VDUs to the workplace can be a traumatic experience for some individuals. Fear of job loss, de-skilling, inability to cope, loss of status, are commonly found among management personnel as well as clerical staff! How the VDUs are introduced is as important as what is being introduced. Change of any kind requires preparation and planning. Indeed, as this article has demonstrated, the ergonomic aspects of VDU introduction require a good deal of forethought in their own right.

Individuals need to be informed at an early stage about plans and how changes will affect them. There should be opportunities for people to discuss any proposals and to air their fears and grievances. For many, new technology is synonymous with redundancy and there may be misconceptions about what the technology does as well as what it is unable to do.

Changes in job content and working practices can seem threatening and time is needed to allow people to become accustomed to the new arrangements. Changing technology is as much about changing attitudes as it is about bits and pieces of equipment.

Adequate education and training is a vital element in the management of the introduction of VDUs. Education on why the change is necessary is as important as education about the capabilities and limitations of the system being used. Training in specific machines and software plays a major role in ensuring that VDUs are used effectively and user satisfaction obtained. Too often individuals are given a manual and told 'get on with it' or sent on intensive two-day courses and expected to be experts on their return. This can be extremely stressful and can colour attitudes towards new technology.

Ideally, training should be job related so that people can see immediately the benefits which using a VDU can bring to their work. It should also be phased, with time between sessions to allow for the consolidation of the material learnt before moving to progressively more difficult aspects of the machine and software use. Training should also include health and safety matters relating to VDU use so that individuals know how to avoid the 'health hazards'.

Conclusions

Sound ergonomic practices are a prerequisite for the effective use of VDUs and the avoidance of health hazards. Such practices are not always cheap to apply but neither are the costs of ignoring them. The justifiable concern about the damage to health from VDU use will not abate and is likely to increase as their use becomes ever more widespread. Those responsible for the management of VDU introduction should demonstrate their equal concern for the health of users by following guidelines such as those set out here. Consideration of these issues at an early stage can not only increase the productivity associated with VDU use but lead to a better quality of working life and a positive impact on the health of users. Surely these are worthwhile benefits to be achieved from the application of new technology?

Source material

ARMBRUSTER, A. 'Ergonomic Requirements' in PELTU, M. and OTWAY, H. (eds) New Office Technologies: Human and Organisational Requirements, Francis Pinter, London, 1984.

Health and Safety Executive 'Visual Display Units' HMSO, London 1983.

MACKAY, C. 'Human Factors Aspects of Visual Display Unit Operation', Health and Safety Research Paper 10, HMSO, London 1980.

Department of Employment and Industrial Relations, Working Environment Branch, 'VDU's at Work', Occupational Safety and Health: Working Environment Series Number 13, Australian Government Publishing Service, Canberra, 1983.

BIRD, J. 'Ergonomics of VDU Installation' NCC Publications, Manchester 1985.
PEARCE, B. 'The Contribution of Software Ergonomics and Job Design to the Avoidance of VDU Health Problems', Humane Technology Ltd, Leicestershire, 1986.
'Ergonomics: People and Systems in Dialogue', Business Systems and Equipment, May 1985.

**HOW TO FIND
THE BEST PERSON FOR
YOUR JOB VACANCY**

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

**Professional
Recruitment
Limited**

Building the Domesday database – lessons for integrated database development

Richard Tapper

Edited the Environment section for the Domesday Project videodiscs, and now works with the BBC Interactive Television Unit

The Domesday Project videodiscs are the first integrated database to be created for public dissemination. They incorporate data, presented as simple interactive graphics, pictures and text from an unprecedented array of subject areas. This paper describes how the BBC team solved major problems to combine data from nearly 45 different sources into a single database.

Introduction

By any standards, the Domesday Project is a remarkable achievement. It represents possibly the first integrated database, combining information from a wide variety of sources, that has ever been published; the first database specifically designed for wide public access and dissemination and the first publication of machine-readable data and pictures together on an interactive videodisc. It is also the first time that comprehensive environmental data has been collected in one place. Yet when the project began late in 1984, it was by no means clear that the technical problems in producing a commercial videodisc player for the Domesday videodiscs could be overcome, or that it would be possible to squeeze a national database onto a small microcomputer.

Publication of the two Domesday videodiscs in November 1986 marked the culmination of dedicated work by a team of over 100 people within the BBC, and its associated partners, to solve immense technical, logistical and conceptual problems. Publication is also important since it has set the agenda for discussion and for future development of other databases.

The Domesday Project has generated solutions to many of the conceptual problems encountered in building fully integrated databases, especially in storing and ensuring compatibility between data from very different sources. These solutions are important for the development of the Economics and Social Research Council (ESRC)-funded Regional Research Laboratories for database development in the economic and social sciences, and for the development of the Rural Areas Database at the ESRC Data Archive, which are both indirect successors to the Domesday database. Indeed, the ESRC Data Archive participated in the Domesday Project, and holds a complete set of the computer tapes used to produce the Domesday videodiscs.

Aslib Proceedings, 39 (4), April 1987, p p.107–121 Printed in Great Britain

The purpose of this paper is to consider the conceptual and technical solutions used in building the Domesday database and their implications for the development of other databases, beginning with a brief description of the Domesday database, and an example of the data comparisons that are possible.

The Domesday database

The Domesday database is published as a double album of interactive videodiscs: the Community disc and the National disc. The Community disc gives a local view of Britain built up from information sent in by 15,624 schools and community groups. It describes the life, landscape, industry and culture of most of the populated areas of the country in over 150,000 screen pages of text and 24,000 pictures.

The National disc is a compilation of national statistics, thematic maps, picture sets on 520 topics from families to forestry, and text on national and regional issues. All this information is held in nearly 60,000 computer files, organised under four headings: environment, society, culture and economy. Both discs use keyword and hierarchical indexes which permit rapid, interactive access to all types of information[2]. In addition, the National disc includes software for interactive graphics displays, data analysis and comparison[3], which are among the most important features of the Domesday database.

A small team of staff working within the Domesday Project have carried out the integration of widely ranging material both in terms of source and type of information. Their role has been to ensure that all aspects of contemporary British life are represented nationally, through statistics from unemployment to soils, from attitudes to expenditure, through written material and through pictures. A key part of the work has been to integrate information from such diverse sources into a coherent whole, where each item will stand up on its own, in whatever context an eventual user may chose to place it, and will be compatible with other items in terms of the ways in which it is stored and displayed. The ability to compare different items is as important as the individual items on their own. By allowing comparisons to be made, users are given a powerful method for exploring themes of their own construction, drawing on materials on the videodiscs.

An example will illustrate this. If you wish to make a comparison between pollution and the distribution of certain industrial sites for example, information on both topics is available: the pollution information from surveys of sulphur dioxide pollution provided by the Institute of Terrestrial Ecology, while industrial information is based on details supplied by the Business Statistics Office. For comparison, information needs to be held in forms that are readily comparable, despite the very different sources and original forms of the information. In this case both data on pollution and industrial location are suitable for display as maps. It is equally possible to make comparisons between car ownership and employment, the road network or even the British climate.

Building integrated databases

The purpose of integrated databases is to bring data together from different surveys, in diverse regions of the environmental and social sciences, in such a way that they can be readily compared. For comparison to be possible, data need to be stored in standard formats and by standard units (aggregation units) that are arithmetically compatible between datasets. Standard aggregation units may be geographical units, like counties or grid squares, or a set of cross-tabulating units, such as time, social status, or sex. For comparison to be permissible, criteria governing the statistical validity of inferential comparison between any chosen combination of datasets must be satisfied, although this is not dealt with in this paper. How can these requirements for comparison be met, and what are their implications for the flexibility of databases when in use, and for their construction? These questions will be explored shortly, but first, since the National videodisc combines both environmental and social data, the differences between these data and their methods of collection will be looked at.

Environmental versus social data and surveys

Environmental data are collected through continuing field surveys, which refine environmental knowledge to greater degrees. For example, the first data recorded for production of geological maps in Britain were collected more than 160 years ago. They are a valuable record irrespective of their age and remain available to reinterpretation in the light of developments in geological knowledge.

By contrast, rapidly changing social patterns mean that social science data must be updated from regular surveys. Employment data is collected and published every month, while the Census of Population is carried out once a decade, and many large changes can occur between surveys. A few environmental surveys such as the Annual Census of Agriculture fit this category, too. However, most environmental data are continually refined to provide greater detail, to reflect the relative constancy of the environment, while data collected in social surveys is continually replaced by more up-to-date results. The differences impose general survey structures within the social sciences that can be very different from those of environmental surveys.

Comparing information: data storage formats

Three separate formats for data storage have been used on the National videodisc. These are:

1. Chart display format for data stored by cross-tabulation aggregation units, where the maximum number of categories within any unit is 24 and where the total number of data values is less than 10,000. Information held in this format is displayed by the Domesday system as bar charts, pie charts or line graphs.

2. Areal unit data format for data collected by different types of area such as counties or districts. The number of counties or other areas can exceed 24, and for each either a ratio value, such as sub-standard dwellings per 1,000 dwellings; an absolute value, such as total number of sub-standard dwellings, or both can be stored. The total number of areas for any type of areal unit must be less than 10,000. Information held in this format is displayed by the Domesday system as graphics-generated maps.
3. Grid square data format for data stored as a series of individual values for single grid squares. There is no limit to the number of grid squares that may be stored in this format, which has the advantage that information can be stored in a compressed form, and so takes up less space on the videodisc. Information held in this format is displayed by the Domesday system as graphics-generated maps.

Each data storage format is linked to a particular type of screen display within the Domesday system and to the capacity of the BBC microcomputer. A general data storage structure that is not machine-specific is, however, desirable, and would allow displays to be extended to take advantage of more powerful computers.

In the future development of databases, closer links between chart displays and graphics-generated map displays are vital; chart displays that summarise geographical information are valuable for information processing and interpretation. To link the two display types, data need to be held in a common data storage format independent of the screen displays used. All data would potentially be displayable as both charts and maps. Data would be screened before inclusion in the database and types of display inappropriate to particular data would be disallowed. Linked map and chart displays already feature in some specialist databases, and in database management software, designed for mainframe computers. A general data storage format has the advantage that all data are then compatible with any screen display and retrieval options written for a database. It also allows a single set of software to be used in database production.

Processing data into compatible formats

To hold each individual survey record for every variable stored on the National videodisc would be impossible. Vast amounts of storage space, would be needed, as well as, for each survey, the specialist primary software to analyse and process individual survey records into usable aggregate statistics. Because of this, data is stored on the National videodisc in a partially processed form. It has already been processed by specialist primary software and is available for further analysis and manipulation by general methods applicable to all surveys on the videodisc. During partial processing, survey data from diverse sources can be converted into arithmetically compatible formats.

Standard aggregation units on the Domesday National videodisc
Display options for statistical analysis are of two types: geographical displays on graphics-generated maps and chart displays. Generally all data are suited to chart displays, which provide aggregated statistical summaries of combined individual survey records. However, only certain survey data are suited to geographical display; for this to be appropriate, the survey must have a geographical element, and the samples in each geographical unit must be large enough to have statistical validity within each unit. This requirement is rarely statisfied by most small social surveys.

For surveys that are suitable for geographical display, the standard aggregation units are different types of areal unit. Areal units used by the National videodisc are shown in Table 1. Information displayed as charts uses cross-classifying units such as age, sex and social class, as standard aggregation units. Some of the main cross-classifying aggregation units used are shown in Table 2. To permit the greatest potential use to be made of data for statistical comparison, it has been essential to ensure that all data included on the National videodisc are stored for all appropriate standard areal and cross-classifying units.

Not all possible aggregation units are suitable for every dataset. Part of the work of the BBC Domesday Project team has been to ensure that all suitable aggregation units are available for each dataset on the videodisc. In many cases this has meant aggregating individual sample records into subtotals by the standard areal or cross-classifying aggregation units, while

TABLE 1. *Standard aggregation units for geographical data storage*

Countries (England, Wales, Scotland, Northern Ireland)
Standard Regions
EEC Regions
Counties
Districts
Wards
Postcode Sectors
Postcode Districts
Police Authority Areas
Regional Health Authorities
District Health Authorities
'Functional Cities'
Employment Office Areas
Travel to Work Areas
Library Areas
ITV Regions
Local Education Authorities
Parliamentary Constituencies

Grid squares from 1 km to 10 km

TABLE 2. *Standard aggregation units for chart data storage*

Age
Sex
Social class
Family size
Marital status
Employment
Unemployment
Income
Expenditure
Education

Time (year, month, quarter)
Frequency (e.g. of attendance, of purchase)
Number of items
Size (e.g. hectares, square metres)
Volume
Weight
Subjective scales (e.g. good . . . bad)

Standard industrial classification
Industrial unit income
Industrial unit size
Number of employees

Land ownership
Standard regions

in some instances statistical interpolation models have been used to infer data sub-totals for relevant aggregation units. Comparisons between datasets would not be possible without the use of standard aggregation units.

Creating the database

How do you start to build a comprehensive database about Britain in the 1980s? The information that it contains must be general enough to interest a large audience, unlike most databases which are designed solely for use by specialists. The information must cover all aspects from the physical environment to social attitudes, from industry to employment. Some topics, like fashion and design, are most suited to visual presentation, while for topics like planning and government text alone is appropriate. A balance needs to be generated between the variety of possible graphics displays, text, and pictures. Many environmental and social topics are ideally illustrated through graphics displays – as maps or as charts. But the most suitable type of information is not always available, and alternatives may need to be substituted.

Where did all the information come from?

A decision to include only national information, and limited mainly to that available on magnetic media, on the videodiscs was made early. A local picture of the areas where over three-quarters of the population of the United Kingdom live is provided by the text sent in by over 15,600 schools and community groups, and included on the Domesday Community disc. The decision meant that no local surveys on a Metropolitan or county-wide base, or even covering one of the major regions of England and Wales, would be sought or included on the videodiscs.

Although made for practical reasons, this decision has had far reaching editorial implications. As a result, detailed survey work undertaken as a basis for policy studies and planning by local authorities, and by independent, locally based organisations, was excluded from the videodiscs. Consequently surveys contained on the National disc mainly address questions perceived by National government; alternative, more local surveys, often seeking to answer questions thrown up by a different social analysis, and attuned to local conditions, have been omitted. Amongst the surveys excluded by this decision are local surveys of housing need, employment, ethnic monitoring and planning. The Domesday videodiscs must be viewed keeping these absences of alternative survey approaches in mind.

Two main types of nationally-gathered statistical information, then, were available to the Domesday Project:

1. comprehensive mapped information covering either the whole of the United Kingdom, or England and Wales, Scotland or Northern Ireland, and suitable for both mapped and chart displays;
2. sample surveys such as opinion polls or the government's General Household Survey, and which are considered to be relevant to the whole of the United Kingdom, and suitable only for chart displays.

The sources and types of display used for information in the main topic areas of the National videodisc are shown in Appendix 1. Geographical information and displays predominate for environmental topics, while chart displays only, are available for social and economic topics, such as Attitudes and Household Structure and Finance.

For many surveys in these and other social and economic topic areas, the sample size is not large enough to allow anything more than a general regional breakdown. In all of them, even those of a very large sample size, their value lies in cross-tabulation of different variables within sample populations. A table from the General Household Survey can be cross-tabulated to give the breakdown of, say educational attainments, by sex, social group, type of attainment, income, and so on.

Where both geographical and chart displays are used, the split between numbers of data items available for each display type is about equal for Environmental Pollution, Health, and Industry; for Law and Order, more chart displays are available than geographical displays, while where both types of display are available for other topic areas, geographical displays exceed chart displays in number. Over three-quarters of the information available for chart displays is for topics for which no geographical information is available, supporting the contention that there are large differences between the structure of environmental and social surveys.

Appendices 2 and 3 are also of interest from the point of view of editorial decisions made to achieve a balance between different types of graphics displays. Generally, all sources of information which have yielded less than 80 data items were not originally included in plans for the Domesday Project. None of the sources of data used for chart displays of Agriculture, Environmental Pollution, and Industry were listed in the original plans, and much of this information was extracted as summary statistics from printed sources. Without the additional information which was sought and included on the National videodisc, some key topics would not have been covered adequately, and others would not have been covered at all.

Where data is limited or lacking in topic areas, a greater number of text pieces have been included to deal with aspects that would otherwise have been omitted. This is particularly true of Arts and Entertainment, Attitudes, Consumption and Marketing, Government, Media and Communications, and Urban Environment. Text is used within all topic areas to express details of experience and interpretation which cannot be conveyed through data alone. Editorially, a 'scrapbook' approach was adopted to select text for the National videodisc. In practice, the scrapbook has mainly been clipped from the national press. The pieces that have been pasted in are those which frequently catch the eye: consequently topics which are mostly covered by specialist articles, and commentary on the implications of policy and planning, are underrepresented.

Conclusion

It will take some time to fully evaluate the Domesday database simply because of its size. To look completely through the double albums would take about 14,000 hours, but early responses from specialists and general public should be more immediate. Of particular importance are the views of scientists and statisticians on the suitability of levels of scale chosen for standard aggregation units: are they too coarse, or do they break data into chunks so small that they are subject to random variation and potential misinterpretation?

Whatever the answer, the Domesday database demonstrates the way in which integrated databases can be built and developed, and has created many structures for their management. The potential value of the videodiscs as an educational resource and as a new way of exploring facts concerning the society within which we live and work is undoubted. As Brian Long, Managing Director of Acorn Computers, said at the launch of the Domesday videodiscs, 'We need no longer be misled as to the reality of any situation. If information is power then no longer need any of us be powerless.'

REFERENCES

1. LEE, D. (1986) The Domesday Project: a progress report, *The Library Association Record.*
2. TAPPER, R. (1986a) The BBC Domesday Project – an educational review, *Journal of Educational Television*, **12**, 197–210.
3. TAPPER, R. (1986b) The Domesday Project, *Aslib Information*, **14**, 160–161.

APPENDIX 1. *Numbers of mappable datasets on the national disc*

Source and type of information	*Geographical Aggregation units*	*No. of datasets*
AGRICULTURE		
MAFF Agricultural census for England and Wales 1981	5, 10 km	197
DAFS Agricultural census for Scotland 1984	5, 10 km	141
ITE Physical Attributes Database Agriculture 1972	10 km	24
*CLIMATE		
ITE Physical Attributes Database Climate	10 km	28
*CONSERVATION		
ITE Physical Attributes Database Conservation areas	10 km	4
NCC Area of SSSIs	5 km	1
ENVIRONMENTAL POLLUTION		
ITE Pollution and acid rain	10 km	4
CIPFA Waste Collection	Districts	64
*GEOGRAPHICAL BOUNDARIES		
District, County, Regional Boundaries		23
Urban and Regional Geography		31
*GEOLOGY		
BGS Geological map	1 km	1
(Geology map includes 50 categories)		
BGS Geochemistry of Scotland	5 km	8
AGRG Geochemistry of England and Wales	5 km	8
ITE Physical Attributes Database Geology	10 km	34
NRPB Survey of terrestrial radiation	10 km	1
HEALTH		
MRC Mortality Atlas	Functional Regions	24
INDUSTRY		
BSO Industrial locations	1–10 km	55
BGS Location of mines and quarries	1 km	29
CIPFA Highways and Transportation	Counties	63
*LANDSCAPE		
Schools count data for amenities	1, 2, 10 km	63
Schools land cover survey	1 km	20

ITE Physical attributes database Topography and altitude (includes road and rail networks)	10 km	26
LAW AND ORDER		
CIPFA Police and Crime	Police Authorities	75
LEISURE AND RECREATION		
CIPFA Public Libraries	Counties	31
CIPFA Leisure	Districts	148
*PLANNING		
CIPFA Planning	Districts	82
POPULATION		
OPCS Population census 1981 and selected variables for 1971	1–10 km Districts+	360
OPCS Population estimates	Districts+	20
OPCS Mortality statistics	Districts+	14
OPCS Population change since 1901	Districts+	8
*SOILS		
SSEW Soils maps of England and Wales (Main soil map includes 85 categories, Main landuse map includes 25 categories)	5 km	7
MISR Soils maps of Scotland (Main soil map includes 36 soil categories, Land capability map includes 7 categories)	5 km	12
ITE Physical Attributes Database Soils	10 km	8
*URBAN ENVIRONMENT		
CIPFA Environmental Health	Districts	120
WILDLIFE		
ITE/BRC Species distributions	10 km	102
Different time periods	10 km	41
NCC Main habitats in SSSIs	5 km	10
WORK & EMPLOYMENT		
DEm Census of Employment (NOMIS database)		
Unemployment	Districts+	351
Employment	Districts+	2205

(these variables are broken down into employment in different industries, or unemployment, by sex and for the years 1979, 1982 and 1985)

* – Mappable datasets only are available for this topic.

APPENDIX 2. *Number of datasets for chart display on the national disc*

AGRICULTURE	20
MAFF Pesticides surveys	10
Intervention Board for Agricultural Produce	8
MAFF Livestock statistics	6
MAFF Irrigation of crops survey	4

MAFF Stocks of cereals on farms	35
Rothamstead Experimental Station, Fertiliser Surveys	
*ATTITUDES	400
British Social Attitudes Survey	250
Eurobarometers (10a, 13, 17, 18)	
*CONSUMPTION & MARKETING	4
Henley Centre for Forecasting	1
Ulster Marketing Survey	
*EDUCATION	4
DES Education and Science Statistics	
ENVIRONMENTAL POLLUTION	61
DoE Environmental Protection and Water Statistics	4
NRPB Radiation exposure surveys	
*FORESTRY	50
Forestry Commission	
*GOVERNMENT	450
British Election Study 1979, 1983	
HEALTH	
RSGB Alternative Medicine Survey	20
Royal Society for the Prevention of Accidents	6
*HOUSEHOLD STRUCTURE & FINANCE	275
CSO General Household Survey 1974, 1976, 1978, 1980	200
CSO Family Expenditure Survey 1976, 1978, 1980, 1982	7
Building Society Mortgage Lending	1
DHSS Supplementary Benefits	41
CSO Social Trends	
INDUSTRY	
BSO Size of industrial units	24
DE Energy Statistics	28
DoE Housing and Construction Statistics	35
DTI Waste materials statistics	7
DTp Transport Statistics	61
*LANDOWNERSHIP	21
Centre for Agricultural Strategy	8
MoD Defence Estimates	
Report of the Committee of Inquiry into the Aquisition and Occupancy of Agricultural Land	4
LAW & ORDER	
Home Office Criminal Statistics	9
Home Office British Crime Survey	220
LEISURE & RECREATION	
English Tourist Board	5
JINCRS National Readership Survey	5
RSGB Readership Survey	30
Women, Bingo and Leisure	3

*LIFESTYLES	
CSO Living in Britain Survey 1983	120
BBC Daily Life in the 1980s	100
*MEDIA & COMMUNICATIONS	
AGB TV Trends	10
BBC Educational Broadcasting Services	36
British Telecom	8
Post Office	6
*NATIONAL ECONOMY	
CSO Macro Economic Data bank (time series)	800
CSO Regional Trends	12
POPULATION	
OPCS Population Census 1981 and some 1971	50
Euromonitor	58
*WATER	
Water Authorities Association	30
WILDLIFE	
BTO, Wildfowl Trust, Game Conservancy	8
WORK & EMPLOYMENT	330
CSO Workplace Industrial Relations Survey 1980	60
CSO Labour Force Survey 1975, 1981	30
RSGB Domestic Services	

* – Chart datasets only are available for this topic.

List of abbreviations for data sources in Appendices 1 and 2

AGB	Audits of Great Britain
AGRG	Applied Geochemistry Research Group, Imperial College
BRC	Biological Records Centre
BBC	British Broadcasting Corporation
BGS	British Geological Survey
British Telecom	
BTO	British Trust for Ornithology
BSO	Business Statistics Office
Centre for Agricultural Strategy	
CSO	Central Statistical Office
CIPFA	Chartered Institute for Public Finance and Accountancy
DAFS	Department of Agriculture and Fisheries for Scotland
DES	Department of Education and Science
DEm	Department of Employment
DoE	Department of the Environment
DHSS	Department of Health and Social Security
DTI	Department of Trade and Industry
DTp	Department of Transport

English Tourist Board	
Euromonitor	
Forestry Commission	
Game Conservancy	
Henley Centre for Forecasting	
Home Office	
ITE	Institute of Terrestrial Ecology
Intervention Board for Agricultural Produce	
JINCRS	Joint Industry Newspaper Circulation Research Surveys
MISR	Macaulay Institute for Soil Research
MRC	Medical Research Council
MAFF	Ministry of Agriculture, Fisheries and Food
MoD	Ministry of Defence
NRPB	National Radiological Protection Board
NCC	Nature Conservancy Council
OPCS	Office of Population Census and Surveys
Post Office	
RSGB	Research Surveys Great Britain
Rothamstead Experimental Station	
Schools survey for BBC Domesday Project	
SSEW	Soil Survey for England and Wales
Water Authorities Association	
Wildfowl Trust	

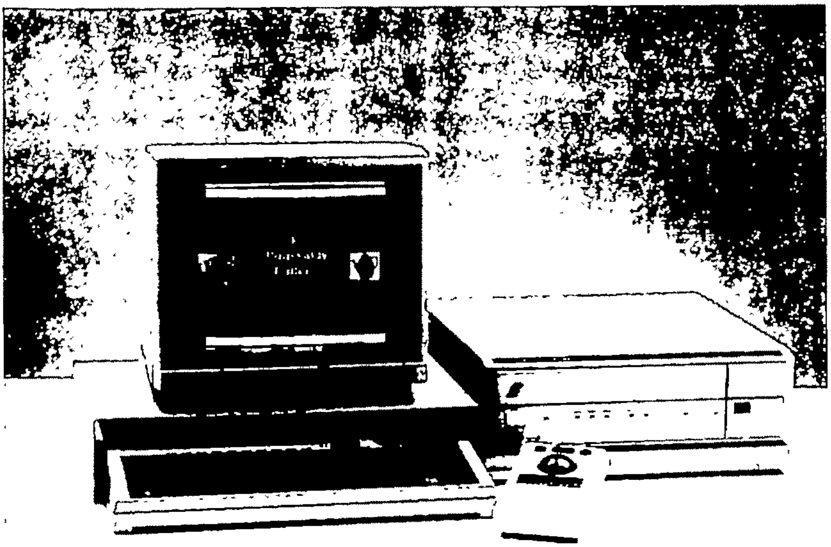
APPENDIX 3. *Number of text items on the National disc*

	No. items
AGRICULTURE	
Agriculture	47
*ARTS & ENTERTAINMENT	
Arts & entertainment	253
Language	24
*ATTITUDES	
Beliefs & attitudes	71
CLIMATE	
Climate	18
CONSERVATION	
Conservation	43
*CONSUMPTION & MARKETING	
Consumption	84
EDUCATION	
Education	68
ENVIRONMENTAL POLLUTION	
Environmental Pollution	35

FORESTRY	
Forestry	13
GEOLOGY	
Geology	7
*GOVERNMENT	
Armed forces & defence	31
Politics & government	118
HEALTH	
Health	103
HOUSEHOLD STRUCTURE & FINANCE	
Personal finance	23
Social welfare	31
INDUSTRY	
Industry	59
Science & technology	67
Transport & communications	7
Industry in environment	42
LANDSCAPE	
Landscape	13
LAW & ORDER	
Law & order	68
LEISURE & RECREATION	
Leisure & recreation	37
Sport & games	34
Tourism	28
*LIFESTYLES	
Customs & heritage	25
Home & community life	66
Lifestyle	64
Religion & philosophy	48
*MEDIA & COMMUNICATIONS	
Mass communications	146
Printed word	12
People & events	25
NATIONAL ECONOMY	
Economy as a whole	40
Finance	23
Overseas Trade	9
Public Sector	21
POPULATION	
Population	26
PLANNING	
Planning issues	50
SOILS	
Soils	6

*URBAN ENVIRONMENT	
Housing	50
People in the environment	21
Urban environment	25
WATER	
The seas	12
Water resources	14
WILDLIFE	
Wildlife	21
WORK & EMPLOYMENT	
Labour relations	7
People at work	46

* — Text items predominate for this topic.



COMPUTERS & COMMUNICATIONS

What are the implications for business of the convergence of computer and communications systems?

What are the business opportunities of the future?

What are the likely developments in hardware, software, personnel requirements?

Where can you find the answers to these questions?

A major new report and analysis that no-one in business can afford to ignore.

To: Aslib, Information House, 26/27 Boswell Street, London WC1N 3JZ
Please send me full details of **Computers and Communications.**

Name ....

Organisation ....

Address..

....

Polytechnic libraries and academic research: a case study from Brighton Polytechnic

Michael Heery

Subject Librarian, The Bolland Library, Bristol Polytechnic (formerly Course Resources Officer for Business Management and Finance & Accountancy at Brighton Polytechnic)

This paper examines the growth of research in polytechnics. It considers the extent to which polytechnic libraries are able to support academic research. The role of large research collections, such as exist in many university libraries is discussed. The paper argues that polytechnic libraries can best support research not by emulating the collection-building policies of the universities, but rather by developing active information services. It uses a case study from Brighton Polytechnic to demonstrate how a successful service has been offered to researchers in the subject fields of accountancy, business and management. Analysis of online search records and of a survey of academic staff is used to evaluate the efforts of Brighton Polytechnic library to provide a useful service to academic researchers.

Can polytechnic libraries provide adequate support for academic staff engaged in research? This question is growing in importance as the research effort of the polytechnics increases. As this article demonstrates, doubts have been expressed about the ability of polytechnic libraries to support research work. Most of these doubts centre upon their lack of research collections of the sort found in many university libraries.

Research collections may be defined as special collections of material that allow investigation of the literature of specific subjects in considerable depth. They are usually of national or international importance, attracting researchers from outside the host institution. This article examines the growth of research in polytechnics and investigates the role of the research collection in an academic institution. It argues that polytechnic libraries can, in fact, provide services to research workers that are as valuable as those found in universities, and presents a case study from Brighton Polytechnic.

There is no doubt that the amount of academic research undertaken in polytechnics is increasing. In 1974 there were 1,546 research students registered for Council for National Academic Awards (CNAA) M.Phil and PhD degrees. By 1983 this figure had increased to 3,491.[1] The British Library has identified 5,629 research projects currently in progress in polytechnics – an average of 187 projects per institution, excluding graduate research for higher degrees.[2] Even in the early 1970s a majority (59

Aslib Proceedings, 39 (4), April 1987, p p.123–133. Printed in Great Britain.

per cent) of academic staff in polytechnics were doing research, and the number has increased steadily over the intervening decade.[3] Inevitably, this increase has had implications for polytechnic libraries.

The growth of research within polytechnics has several causes. Larger numbers of staff teaching in the public sector have research degrees and consequently have a greater instinct for academic research. They contrast with many of the older staff whose expertise in vocational subjects was wholly based upon practical work experience. There is also a greater belief within polytechnics that they are as academically respectable as the older institutions of higher education. This can be seen, for example, in those polytechnics that have recently applied for university status or have expressed a desire to validate their own degrees. Academic self-confidence of this sort finds expression in institutional research policies and departmental research projects. As the Leverhulme study *The Future of Research* comments, 'From the viewpoint of individual polytechnics the ability to do research provides increased status and autonomy.'[4]

However, the most significant influence upon polytechnics in this area is CNAA policy. The CNAA's Policy Statement on Research, issued in 1983, is quite explicit about the importance of research:

> 'Council's policy is based on the philosophy that to ensure parity of standards of its awards with the universities in institutions in the public sector, the quality of academic staff and the institutional environment must be maintained. Council is convinced that research and other comparable activities are essential elements in the academic health of institutions not only to sustain at the highest possible level the educational functions, but to contribute to the solution of society's problems. Hence, it expects institutions through their policies to ensure that a significant proportion of their staff involved in teaching of courses leading to the Council's awards are engaged in such activities. Moreover institutions are expected to provide a high standard of specialised accommodation, library and computer services, academic, technical and administrative staff and good working facilities generally, which include adequate financial support.'[5]

This general statement of policy is backed up by a threat to those institutions that do not display an active commitment to research. 'When considering new course proposals or the progress of approved courses Council expects evidence of acceptable staff research records; where there is inadequate research activity, course approvals are placed in jeopardy.'[6] The result of this kind of external pressure is to influence policies within polytechnics. More resources are made available to departments that display a clear research policy. Staff development programmes may well be introduced or enhanced and increased use is made of sabbatical leave for research. A greater number of full-time researchers, such as research fellows and research assistants, are added to academic departments. The ultimate effect is that increasing numbers of staff in polytechnics are developing research proposals. There is little doubt that research will continue to grow in polytechnics. What remains in question is how well polytechnic libraries will support the institutional research effort.

The CNAA specifically mentions libraries as key supports for research. 'Research in all disciplines relies on the availability of an adequate library with a staff capable of providing the advice and guidance that staff and research students in particular need in making best use of the institutional library facilities and national information services to support their research activities.'[7] However, polytechnic libraries are poorly funded for research compared with their university counterparts. They received none of the special foundation grants that enabled the new universities of the 1960s to initiate their research collections. Consequently, there are very few such collections in polytechnic libraries. A recent survey by the Council of Polytechnic Librarians was most notable for revealing a great dearth of research collections of anything approaching national importance.[8] How, then, can polytechnic libraries perform the role expected of them by CNAA?

Polytechnic libraries are sometimes seen solely as teaching collections and so as unfit to support academic research. This is particularly true in subjects where research is often library-based, as in the humanities and social sciences. In 1983 a British Library survey of polytechnic history lecturers discovered that over 25 per cent of historians make no use whatsoever of their own library when doing research. Of 191 responding lecturers only 48 considered their polytechnic library sufficiently well stocked to support research. One respondent to the survey summed up his views as follows:

> 'I think I am a serious scholar. Accordingly I have the poorest possible opinion of all the polytechnic libraries I have ever seen. They simply do not have the funding to compete with university libraries.'[9]

Criticism of polytechnic libraries for their lack of research collections is not, however, confined to academics working in the humanistic tradition of research. A survey of researchers in polytechnics across a range of disciplines found that '... research assistants were considerably more critical of library facilities than were research students ... they had come into the polytechnic sector from a university background, and their critical evaluation was no doubt a reflection of their experience of the somewhat more generous library provision enjoyed by the universities.'[10] The problem has been succinctly described by one polytechnic librarian:

> 'Research is expensive, and one of its major costs lies in the provision of appropriate library services. These may be specialised scientific journals, comprehensive bookstocks in the humanities or the kind of special, subject-related collection which alone can support, and perhaps more importantly attract, first-rate research in many disciplines. If polytechnics are serious in wishing to pursue activities of this kind they must recognise that they will not succeed on shoestring library budgets. If they cannot afford it, should they not be realistic and

> admit as much and turn their efforts to those activities which they can do well?'[11]

In practice, however, the picture is not as gloomy as these criticisms suggest. The case against polytechnic libraries has chiefly been that their lack of research collections casts them in an unfavourable light when they are compared with universities. University libraries are considered better able to support research because of their special collections. Critics of polytechnic libraries adhere to the view that '. . . the standard measure of the value of a collection to the scholar engaged in research is its completeness.'[12] This view needs to be challenged. When it comes to providing library services for researchers quantity and quality are not, in fact, synonymous. Many university libraries do indeed maintain special collections that attract researchers from elsewhere. This does not mean that these university libraries are providing adequate support for a majority of their own academic clients engaged in research. No academic library can expect to collect large quantities of material in all fields. The expense of maintaining large research collections may well lead to distortions of stock collection, leaving some academic staff with relatively poor provision. Inevitably, there will be many researchers in universities, as there are in polytechnics, who have to visit libraries other than their own to obtain the material they need.

There is evidence indicating dissatisfaction among university researchers with their library collections. Criticisms made of university libraries are actually very similar to those sometimes made of polytechnic libraries. The existence of research collections does not seem to solve researchers' problems. For example, Richard Startup's study of university teachers found that 25.5 per cent of academic staff doing research were either 'dissatisfied' or 'very dissatisfied' with their library facilities. A further 31 per cent had 'mixed reactions' about the value of their library to their research.[13] Ernest Rudd's study of graduate researchers at a range of universities concluded that 'students in all fields were highly critical of their university libraries . . . the stocks of books and acquisitions of new books were woefully inadequate for their needs.'[14] Rudd's survey provides many quotations from people doing research at some of the country's largest and oldest university libraries. All are critical of the collections they have to use, despite the existence of numerous research collections. The point being made here is that the answer to the problem polytechnic libraries face in providing support for research does not necessarily lie in emulating university research collections. Funds are not available for the development of such collections and besides they are not necessarily what is required. Academic researchers have to visit collections in other institutions wherever they are based. Even in the largest institutions researchers are obliged to visit record offices, professional and scientific institutions and library research collections in other universities. It is simply not possible to house everything researchers need in one academic library. The received wisdom that all researchers spend their time digging around in large collections is also open to question. Many researchers are concerned mainly with recent material. Large collections of books and periodicals that have accumulated over many years may well be redundant to their research. Studies being conducted at the University of Sussex library shows that academic researchers across a range of disciplines including the humanities tend to use recent rather than older books.[15]

Polytechnic libraries can provide useful support to academic researchers, not by building up research collections, but rather by developing active information services that are attuned to the needs of their research clientele. It is not enough for an academic library to support research workers only by buying books in their subject area. What many researchers can benefit from is the provision of information useful to their research. A successful information service can only operate where there exists close liaison between academic and library staff. In this respect many polytechnic libraries are at an advantage over their more traditional counterparts. The involvement of many polytechnic subject librarians in teaching programmes means that they already have good contacts with academic staff. Liaison over user education, attendance at departmental meetings and involvement in course submissions and reviews all help to cement links between academic staff and the library. These links are the basis for library support for academic research. Where subject librarians have a good knowledge of departmental and individual research projects they are in a position to develop an active information service for researchers.

In providing such a service in a polytechnic library the use of online databases is indispensable. External databases enable the library to overcome many of the limitations of its stock. They provide contact with far greater quantities of information than could ever be assembled in any single research collection. When used in conjunction with other, more traditional library services, online searching can provide a useful and practical service to the research worker. Examples already exist of this kind of service being offered to researchers in science subject areas.[16] The Brighton Polytechnic case study describes the provision of an information service to researchers in the subject fields of accountancy, business and management.

The departments of Business Management and Finance & Accountancy at Brighton Polytechnic have, in common with other departments, considerably expanded their research effort over the past five years. An indication of this commitment to research can be seen in the adoption of agreed departmental research aims. These are research policies that exist over and above those of individual members of staff, and identify areas of research that the department as a whole is committed to. In consequence, as well as individual research projects (either externally funded or for personal PhDs) there are interdisciplinary group research projects. One example of this kind of research is the investigation of the impact of technological innovation on certain specific areas of manufacturing industry. Commitment to research can also be seen in the establishment of departmental research groups; working papers and seminars on research subjects; enhanced staff development programmes and the appointment of research assistants, research fellows and 'principal lecturer' researchers. One consequence of increased research efforts can be found in the development of postgraduate courses and a research degree programme, which in turn increase the number of people in the department doing research at student level. At Brighton Polytechnic academic departments and subject librarians (called Course Resources Officers or CROs) liaise very closely over the resource requirements of specific courses. Academic staff have been used to the information needs that arise out of taught courses being dealt with by their CRO. Inevitably, the growth in research led to expectations that library staff would be able to satisfy the information needs of research workers.

For its part, the library decided to take positive steps to provide a useful service to researchers. In 1984 the CRO began a series of measures designed to publicise services likely to benefit research workers. Particular attention was given to the promotion of online searching as an aid to research. Each member of academic staff received successive papers that described how external databases were searched and how they could benefit the researcher. Examples were given of successful searches that had already been done on behalf of other members of staff. It was emphasised that the CRO would do the actual searching of external databases, and that costs would be met by the library (the only exception to this being those projects that received external funding). The promotion of online searching was continued by means of seminars where searches were demonstrated. These were given both by the CRO and by database producers. For example, ICC demonstrated their UK company database to the Department of Finance & Accountancy. The CRO also wrote a monthly article about external databases for the staff internal newsletter to maintain awareness of developments in business databases. These articles contained some information about the techniques and services associated with searching online databases, but were primarily designed to show academic staff the kind of information available from databases. For example, only by actually seeing a copy of a company financial record from the Jordanwatch database can an accountant begin to appreciate its usefulness. Such measures are necessary in order to educate academic staff to the extent that they have an understanding of when an online search might be helpful to their research. Many staff will know of the online searching facility in the library. It requires a certain amount of promotion to get them to incorporate searches into their own research methods. This only occurs when their knowledge of kinds of online information increases.

In conjunction with the promotion of online searching as an aid to academic research other services were developed. Current awareness services were improved. Information on current periodical literature was circulated to academic staff, to bring them into contact with a far wider range of journals than the library itself possessed. For example, the London Business School publication *Contents of Current Journals* was circulated in both academic departments along with several similar publications. This is an example of a simple, but effective, way in which a library lacking in large special collections can still provide a useful service to researchers. Staff using online and current awareness services will naturally want to obtain literature they identify as being useful. An efficient inter-library loan service is, therefore, essential in meeting the needs of researchers. Use of the service by academic staff was facilitated by placing inter-library loan request forms in academic departments so that requests could arrive via the internal mail. Other services offered to researchers included literature searches and the compilation of bibliographies. Most important of all, however, was the informal promotion of the library's services for researchers. Informal discussion about research projects is by far the most effective way by which the subject librarian can discover what the researcher is doing and so offer the most suitable form of assistance. Academic staff usually have their own methods of gathering information.[17] These will undoubtedly have served them well over the years, but it is surprising how often conversation with library staff can reveal an alternative faster and often computerised way of solving a particular problem.

To what extent did these attempts to improve library services to researchers actually succeed? There is no doubt that most academic staff did use the library's literature search service to gather relevant references at the outset of a research project. Bibliographical databases such as *ABI/Inform* and *Management Contents* were especially useful in this respect. Business and management studies are inter-disciplinary subjects and a wide range of bibliographical databases were used. However, involvement by the CRO in research projects also led to online databases being used to provide data that actually formed the basis of the research itself. Non-bibliographic databases such as *Jordanwatch*, *Key British Enterprises* and *Industrial Market Locations* were used to identify companies that researchers wished to investigate. For example, they were used to generate lists of companies having certain specified characteristics. These would then be used in survey research or subjected to other analysis. Financial data was provided from databases such as *ICC* and *Jordanwatch* to accountants researching specific companies. The overall result was that academic staff came to expect that the library could help in solving information problems arising out of their research.

Evidence of the extent to which Brighton Polytechnic Library was able to provide useful support to researchers in accountancy, business and management comes from two sources: firstly from an analysis of online search records over a two-year period; secondly from a survey of academic staff in these subject areas, which was conducted specifically to discover what researchers thought of their library service. The online search records revealed that 122 searches were conducted during the two years in aid of research in the departments of Finance & Accountancy and Business Management. Many of these were composite searches, involving the use of several databases. Only a minority (35) were in support of individual research projects, for instance where a member of staff was studying for a PhD. The majority were done to support group or departmental research projects that were either originated internally or conducted on behalf of outside bodies who commissioned the research. The involvement of the library in substantial research projects of this kind indicates quite clearly that polytechnic libraries can offer useful support to research. The following example illustrates the importance of using databases in certain kinds of research. A member of staff obtained funding from a government body to review and analyse existing predictions regarding the future impact of information technology on certain aspects of work and society. The research involved identifying and reviewing large numbers of publications. The library's online search service was indispensible to this research. The final report on the project was able to demonstrate that the material used had been selected from a search of 4.5 million references.

The final step in the promotion of library services to researchers involved a questionnaire being sent to all academic staff in the departments of Business Management and Finance & Accountancy. This went out in July 1986 in order to discover what staff thought of the polytechnic library's role in their research. Forty-one copies of the questionnaire were mailed, and 30 replies received. However, in all cases, the non-respondents were those members of staff doing little or no research. This was perhaps only to be expected, and the survey's results can be taken as an accurate guide to the views of academic staff about the contribution of the library to their research.

Only one of the 30 respondents made no use of the library for research. All 29 others answered 'yes' to the question, 'Have you made use of the polytechnic library in support of your academic research?' The questionnaire then asked about the kind of use people made of the library. The majority (23) said they used the library for bibliographical information, such as compiling lists of relevant books and articles. Of these 23, 16 people also use the library to obtain specific research data, such as statistics, company details, law cases and other factual information. The questionnaire markedly demonstrated the impact of online search services. Of the 29 researchers using the library, 22 have had one or more online searches done on their behalf by library staff. All 22 rated the search facility as either 'essential' or 'very useful'. Researchers who have used the library to exploit external databases undoubtedly believe they have profited from doing so. It is encouraging that seven members of academic staff (25 per cent of the sample) regard the library's online search service as an *essential* support for their research. The questionnaire also investigated the extent to which staff doing research use libraries other than Brighton Polytechnic. All but three of the respondents stated that they do use other libraries. Staff were asked to rate the degree to which they use other libraries and replied as follows:

often : 7 people
occasionally : 12 people

rarely : 7 people
never : 3 people

These replies indicate quite clearly that most researchers are not wholly dependent upon other libraries. It is evident that the polytechnic library can cater for many of their information needs. Some researchers, like those in other institutions, use a wider variety of collections than the polytechnic can provide. This is only to be expected. Staff with very strong commitments to research will use a wide variety of sources of information. It would be unreasonable to expect any library to satisfy all the requirements of active researchers. The questionnaire confirms that most researchers use specialised collections at some point in their work, often visiting more than one institution in the process. Staff at Brighton Polytechnic make good use of their own library for research purposes, but they also use national, university and special libraries. Amongst the useful libraries named by respondents to the questionnaire are the Science Reference Library, the LSE, Sussex University, the British Institute of Management, the International Labour Office, the City Business Library, the Design Centre, the Institute of Personnel Management, the Institute of Chartered Accountants and the London Business School. This exploitation of diverse sources of information is characteristic of researchers working in interdisciplinary subject fields. These research collections are a national resource and the staff of polytechnic libraries should know when to refer their clients to such collections.

The final survey question was, 'To what extent do you think the polytechnic library service has been able to support your research?' The question invited general comments from staff and 27 people expressed their views. It is in these opinions that the value of providing an active information service to researchers can best be seen. For example, a research fellow commented. 'The library service has been a big plus as a support to my research. An efficient library service is essential for good research to be conducted. Without being able to obtain statistics, background reading and bibliographical searches the job would be difficult if not impossible.' Some staff stressed the co-operative nature of the support the library offers to researchers. 'It's been very useful – a real research partner.' Involvement of library staff in research projects is clearly productive: 'Often I relied on the library for identifying and gathering the essential data for my research.' Some people indicated that efficient use of online services can speed up research by removing or reducing time-consuming tasks, such as tracking down references or statistical evidence: 'I would probably have got there in the end, but the services provided shortened the timescale considerably.' One final comment succinctly identifies the library facilities most researchers believe to be useful. 'Statistical information, research indexes and abstracts and computer searches have all been very useful aids to my research.' The advantage of obtaining the opinions of academic staff about their library service is that they remove uncertainty about whether the service being provided is actually what people want. The comments made by respondents to this questionnaire show that the library at Brighton Polytechnic really is meeting many of the needs of academic researchers.

The results of this survey confirm that polytechnic libraries can offer significant support to people actively engaged in research. They comprise a firm rebuttal to those who have criticised polytechnic libraries in this area of academic librarianship. This case study from Brighton Polytechnic shows how the provision of an information service in the context of close liaison with academic staff can achieve successful results. Polytechnic libraries should not be too concerned about their lack of substantial research collections. They should not seek to emulate university collections, but instead should develop services of the sort found in many special libraries. After all, a great deal of research is done outside academic institutions. Special libraries in companies, hospitals, professional bodies and research establishments are often very successful in providing a service to research workers, despite a lack of large collections. They realise that they cannot be self-sufficient and instead exploit external library and information networks. Polytechnic libraries can do likewise to provide useful services to their own research clients.

REFERENCES

1. CNAA Handbook. Council for National Academic Awards, 1986, 322–323.
2. *Current research in Britain.* British Library, 1986.
3. GREENAWAY, H. *and* MORTIMER, D. Britain (polytechnics): a case of rapidly evolving institutions *in* TEATHER, D.C.B.(ed.) *Staff Development in Higher Education*, Kogan Page, 1979, 68.
4. OLDHAM, G. *The Future of Research.* Society for Research into Higher Education, 1982, 220.
5. *Op. Cit.*, 327.
6. *Ibid.*, 328.
7. *Ibid.*, 338-339.
8. *Copol Newsletter*, **37**, September 1985 and 38, December 1985.
9. SHEPHERD, J. *The Information Needs and Information Seeking Behaviour of Polytechnic History Lecturers.* BLRD Report 5743, British Library, 1983, 29–31.
10. WHITBURN, J. et al. *People in Polytechnics.* Society for Research into Higher Education, 1976, 55.
11. BROPHY, P. The place of special collections in polytechnic libraries. *Copol Newsletter* 38 December 1985, 39.
12. OSBURN, C.B. *Academic Research and Library Resources.* Greenwood, 1979, 129.
13. STARTUP, R. *The University Teacher and His World.* Saxon House, 1979, 61.
14. RUDD, E. *The Highest Education: a study of graduate education in Britain* Routledge, 1975, 91–94.
15. This research, which is as yet unpublished, is being conducted by Mr A. Peasgood at the University Library.

16. See for example NEWAY, J.M. The role of the information specialist in academic research. *Online Review*, **6**, 1982, 527–535.
17. An interesting article that contrasts the information-gathering techniques of academic staff with those of librarians is STOAN, S.K. Research and Library Skills: an analysis and interpretation. *College and Research Libraries*, 45(2), March 1984, 99-109.

INFORMATION MANAGEMENT

FROM STRATEGIES TO ACTION

Edited by Blaise Cronin

NOW AVAILABLE FROM ASLIB PUBLICATIONS

A major new book which traces the current developments in information handling in the UK.

Eleven experts from diverse fields of information management have produced this thought-provoking collection of essays which together analyse both the theory and the application of this emerging discipline.

An invaluable guide for practising information managers and students alike.

Available now at £19 — or just £15 to members of Aslib. Complete and mail the form on this page to:

Aslib Publications (Sales)
Information House
26–27 Boswell Street
London WC1N 3JZ

If you prefer, simply telephone 01-430 2671, ext 244 to reserve your copy.

ISBN 0-85142-193-8

ORDER FORM

Please send me .... copies of

INFORMATION MANAGEMENT:
From strategies to action

I am/am not a member of Aslib

Name ... .

Organisation ....

Address ... .

I enclose a cheque for £ . . . (£19 per copy, £15 to members of Aslib)

OR Please invoice me

Aslib

Pilot study of the value of secondary information: discussions from the viewpoints of information providers and users

Aatto J. Repo

Information Service, Technical Research Centre, Finland

In this paper the value of secondary information services is discussed from the viewpoints of service-providers and a small group of scientists as users of current awareness services. A selection of earlier studies on the subject is briefly reviewed. The exchange value of secondary information services is demonstrated from the viewpoint of a service-provider. Users usually see the services in the light of their value-in-use though the services often have exchange values as well. In conclusions the problem of assessing the value of secondary information is discussed.

Introduction

The aim of this paper is to study some of the earlier developed ideas of the value of information[1,2,3]. The key issue here is to examine whether there is practical support for the dual approach (exchange value vs. value-in-use) to the problem of value of information. In spite of doubts about the quality of earlier studies we wanted to use somewhat similar methods for gaining further arguments for or against our theory-based critique[3].

The subject of the pilot-study is the value of current awareness information. The original idea was to study the exchange value and the value-in-use of the current awareness bulletins of the Sheffield University Biomedical Information Service (SUBIS) by interviewing a small set of subscribers and then sending a brief questionnaire to all of them. It was expected that this method would provide a picture of the exchange value of the service supported by value-in-use. SUBIS Bulletins were selected because they seemed to be clear information products in a fairly established, competitive market. Scientists in biomedicine were also known to have a constant need for following research done elsewhere. The third reason was that the providers of the service were willing to co-operate in defining the terms of the pilot-study. This willingness to co-operate, although limited, was unusual, as we discovered when contacting other, potentially competing, service-providers.

In the event it proved impossible to interview users of SUBIS Bulletins. It was feared that the interviews could harm business relations. Increased familiarity with the SUBIS products also strengthened the belief that questionnaires to the users could probably not offer detailed enough information for modelling how the users assessed the service. It was decided

Aslib Proceedings, 39 (4), April 1987, p p 135–147. Printed in Great Britain

to focus attention on a small group of senior scientists in biomedicine and their use of current awareness information in general. For convenience, scientists were selected from the Annual List of Publications 1984-85 of the University of Sheffield, Faculty of Medicine and Dentistry.

Interviews with six scientists as users of current awareness information, and three senior members of the SUBIS staff elicited empirical data for modelling the value of current awareness information. These few interviews gave quite homogeneous results; no further data collection seemed to be necessary.

In section 2 some of the earlier studies on current awareness services are introduced. Section 3 is dedicated to exchange values and section 4 to value-in-use. In the last section the results of the pilot-study are placed within the broader context of our research. In the appendix the interview schedules are briefly described.

Studies on the value of current awareness services: a selective review

The value of current awareness services has been continuously under the investigation of information scientists and practitioners. In this section a few British studies are examined as background to the pilot study. When the studies are selected quite randomly the substantial interest of private industry in this academically problematic issue is evident: there is a clear practical need for information officers to prove the economic justification of their information services.

To start with academics. Hawgood and Morley[4] studied, among other things, the value of a current awareness service for a small group (29) of economists. Questions were asked about changes in behaviour of the academics after a new current awareness service was introduced; the number of relevant references found; further actions dealing with references; personal and departmental willingness to pay for the service; and time savings from the use of the service. The results of the study were unconvincing. Only one person was able to estimate time savings from the use of the service (one hour per week). There was no correlation between answers to willingness to pay of individuals and what they thought the organisation would be willing to pay. Could this be a supportive argument for the warnings of survey textbooks about the problematic hypothetical questions[5]?

In the private sector, studies have often been much more straightforward. Nightingale[6] asked the users of the in-house current awareness service how many journals the users estimated it would be necessary to see if the service studied was unavailable. The range of variation was from 0 to 42 and the median was 6. The median was used as the basis for time saving estimates and the result was that the 'value' of the service was over ten times the cost. This single measurement was seen as useful evidence of the value of the service[7] but the hypothetical nature of the question casts doubts on the findings. Later studies have used several measurements to describe value.

Dammers[8] attempted to analyse the exchange value (money-value) of SDI-profiles to their users and, further, to model the costs of current awareness related activities, like journal acquisition, loan activities and user time involved in current awareness activities. His basic data were collected by questionnaires to a set of users who gave estimates of annual time and money savings from the use of the SDI-service. Quite surprisingly all 22 respondents were able to give money-values to annual savings (range from £50 to £1,500) and the value of the service was rated about three times the cost.

There has been quite a lot of discussion about the validity of the studies on the economics of information services and products[1,3] and at one stage it directed research away from value analysis. Associated with current awareness services, for instance, Blick emphasised that 'one cannot put a value on information itself . . . therefore . . . one must do the next best thing which is to show that an information service is being developed on a clear-cut, positive, sensible basis and that its systems and services are cost-effective'[9].

Blick[9,10] studied the economics of an in-house current awareness service to its users and in comparison to bought-in services. The value of the current awareness service was studied using a relevance study (the amount of requests based on references) and a user survey (e.g. about the importance of the service in comparison to other means, its timeliness, and time savings in scanning). Descriptive data were produced to demonstrate the value of the service to its users: the exchange value was 4.6 times the cost and the value-in-use was described, for example, by the finding that 59 per cent of the vital items and 50 per cent of important items would have escaped customers' notice without the service. Further, this in-house service was compared with other possible solutions by giving weights to the following measurements: timeliness, relevance, cost, customer convenience and suitability for large numbers of customers.

The recent study of Whitehall[11] can be seen as a summary of common approaches to the value of current awareness services. The value of *Education News* of Trent Polytechnic to its 29 users was studied by six indicators in comparison to its costs:

1. the alternative cost of keeping up with the literature[6].
2. the alternative costs of a purchased bulletin; a hypothetical question to the user of the market value of the service.
3. what clients would pay for their copy of *Education News* from department funds[4].
4. clients' time spent in making use of the service[12].
5. items from the bulletin which were useful to the clients[9,10].
6. cash value of the contribution made by the bulletin to clients' work[12].

Users found it difficult to answer most of the questions but, a lot of descriptive data (sets of examples) were gathered. The study proved its usefulness because it convinced the chief executive at the Polytechnic that value for money was being obtained.

The above studies have been useful in the evaluation of current awareness services. They have concentrated on the exchange value of the services, but some fractions of the value-in-use issue have also been studied[10]. Wilson[13] goes further in this direction when studying the value of a current awareness service in local government. Data were gathered by questionnaires and interviews[14] about the general usefulness of the *Social Work Information Bulletin* and the usefulness of the example articles ordered through the Bulletin. A majority of the respondents found the Bulletin useful because it was convenient. It increased awareness, was good in sifting, offered new ideas, had good coverage, helped in reference collection etc. The usefulness of documents received (1-3 ordered documents) was in providing background information (51%), contributed to a specific task (16%), personal use (11%), passed to colleagues (9%), and others (13%) – about 16% were not useful. In the more detailed analysis of the responses about 25% of the users reported 'emotional or affecting use' of articles (e.g. reduces the feeling of isolation and sustain one's position), and a list of different types of 'cognitive use' was also produced.

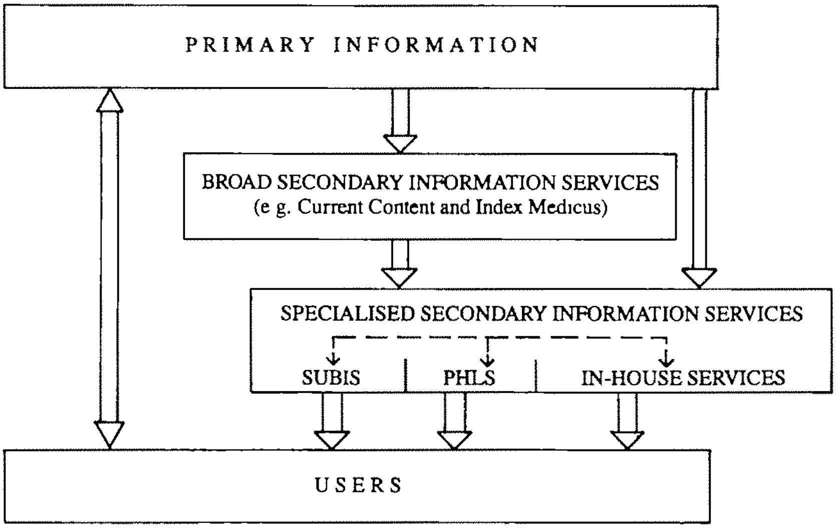
To summarise, when studying the value-in-use of current awareness information services it is necessary to examine the information transmitted[12]. On the other hand, the exchange value of these services could be studied using their market value. In between, there has been a lot of hypothetical questioning and opinion collecting about the services. Could we close or bridge the gap by approaching the problem from both sides at the same time? But perhaps we still need hypothetical questions in assistance.

The exchange value of secondary information: the case of SUBIS bulletins

Secondary information services have been developed to support information seeking when the number of primary information sources has grown beyond the capacity of individuals to encompass. Although direct scanning of journals is still an important means of following ongoing research there is an increasing need to support scanning with less time consuming secondary services.

In the field of biomedicine there are a number of secondary services available but, typically of information products, each is aimed at different user groups or is intended for different use. For instance, Current Content Life Science Bulletin is mainly for general and comprehensive awareness in the field (and in practice it is mainly used in libraries), whereas the ISI online databases offer dedicated service at a fairly high price. Index Medicus and representative Medline database are also for retrospective and SDI searches but they lag behind in timeliness (but also in price). In addition, there are several dedicated services produced almost totally from the above broad services. These services offer some advantages in costs and convenience for their users: SUBIS bulletins, roughly speaking, are examples of cheap specialised service as the Public Health Laboratory Service (PHLS) Bulletin is an example of general service to a specific group of scientist (microbiology). Finally, there are in-house services produced by the user-organisations which come fairly near to the services like SUBIS and PHLS. For the market situation see Figure 1.

FIGURE 1.


PRIMARY INFORMATION
BROAD SECONDARY INFORMATION SERVICES
(e g. Current Content and Index Medicus)
SPECIALISED SECONDARY INFORMATION SERVICES
SUBIS
PHLS
IN-HOUSE SERVICES
USERS

The history of SUBIS Bulletins
The first SUBIS Bulletin was produced in 1966. Since then the number has grown to 54 Express Bulletins and 85 Economy Bulletins at the beginning of 1986. From a handful of scientists within the University of Sheffield the number of subscribers has increased to about 2,000 all around the world. There are up to 300 users per bulletin and the set of bulletins keeps changing following the needs of the subscribers.

Economic thinking has been behind the service right from the beginning. It was realised that scientists at the University used much time in scanning Current Contents (CC) and many found it frustrating. It was calculated in 1966 that when CC cost about £100 the additional cost of scanning would be a further £100. This was based on the assumption that a scientist with an average salary of £7,000 would spend 0.5 hours a week scanning CC. It was estimated that about ten scientists used a copy of CC. By offering an individualised service at the price of £4 the benefit for the users would be over twice the cost and, in addition, the service would be more convenient to the users and the time savings in use could be substantial.

Now that the service has established its position in the market the idea has broadened from reading CC for subscribers. The price of an Express Bulletin is 15-20% of the price of CC, being about £45 in average. The development has been possible by increasing number of subscribers of this non-profit service.

Production of the bulletins

Papers for SUBIS Bulletins are selected from a variety of original articles and abstracting journals. About 80% are from *Current Contents Life Science*; about 5 per cent from other abstracting journals, and 15% from about a dozen journals (*Science, Nature, British Medical Journal, Lancet*, etc.) and varying free sources. References are then assigned by code to individual bulletins and details are typed and corrected using textprocessors. Each month all the references for a particular bulletin are extracted and edited. Edited references are formulated into camera ready copy, printed and copies are sent to subscribers. At the moment the total SUBIS-staff is 16, of whom two scientists select the references.

Feedback from the subscribers is collected continuously for developing the quality of the bulletins and monitoring the need for changes in the selection of the bulletins. Such issues as the need for abstracts and indexes, sufficient print-out, the need for machine readable versions and demands for improvements in the speed of publication have been evaluated. Recently, the need for new bulletins has been studied.

Administratively the service is a part of the University. There are no profit making demands but the service must be self-supporting which means that it broadens or diminishes as income from subscribers fluctuates. Subscribers per produced page of each bulletin is the measure used to monitor whether a bulletin is profitable or not. Although the service providers do not want to see themselves purely as followers of economic factors the case is quite clear. The fact that there are nearly 150 individual products gives some flexibility in developing products according to the expressed needs of the users but in the end the real 'vote' is given by subscribing.

Market situation

The subscribers of SUBIS Bulletins come from 30 – 40 countries around the world. About 60% of some 2,000 subscribers are Europeans (20% in Britain and 1% in Finland), about 35% from the United States and 5% from the rest of the world, mainly from Japan. Most of the users (90-95%) are individual scientists or small groups but there are also libraries and information services among the subscribers.

The basic market situation was described in Figure 1. It is important to follow the development of Current Contents Life Science service because its role is so vital in the production of SUBIS Bulletins. Similarly Index Medicus and Medline database are somewhat competing services but the main idea is to avoid identical service for the same clients. For the new services there seems to be a market in filling the gaps which existing services have left, sometimes the 'old' services notice new-comers by offering similar competing services. When the market share is established it seems to be quite stable. For large orders there are discounts to discourage in-house services but this is mainly prevented by specialised bulletins.

Concluding remarks

SUBIS is a successful service which is valuable to its subscribers by saving time in scanning journals and also in practice mainly, in scanning more general current awareness services. One could easily imagine that the users also see its value in exchange terms but in practice this is not the case because the users seem to think in terms of value-in-use. There is certainly a need for training scientists to think their current awareness practices in economic terms and this would obviously advance the use of secondary information services. And further, when there are so many non-profitable services around this would also mean better services. The questions remain. What would be the value of the time saved? Could scanning be needed 'therapy' or 'relaxing' for scientists in between other research tasks? In any event, the more priced services there are available, the more often there is a need for scientists to think of their information seeking patterns in terms of exchange values.

There were also efforts to study some other related secondary services but, quite surprisingly, the providers were not willing to take part in our pilot study. The reason for this could be that there may be competitive thoughts and attitudes among service providers because most services use the products of others.

About the value-in-use of secondary information in biomedicine

The value-in-use of secondary information is discussed here on the basis of interviews of a small group (6) of scientists in biomedicine at the University of Sheffield. (See appendix for the description of the interview schedule). Senior scientists from the publishing list of the Faculty of Medicine were selected because they were believed to have established comprehensive current awareness patterns. In order to attempt some conclusions even with this small sample scientists were selected from two departments (Medical Microbiology and Biochemistry). The research strategy proved to be rewarding because surprisingly identical behaviour was found. The only major obstacle was that scientists working in basic research were not able to isolate their current awareness activities dealing with individual research projects. A more general view had to be taken[15].

Use of current awareness services

The interviewed scientists spent 25 - 80% of their time in research activities. Their work was mainly basic research, though they also had connections with practical development work (e.g. developing new antibiotics). Their information-seeking profiles were very homogeneous. They had numerous personal contacts with other scientists working in their field (maintained by visits, conferences, exchange of publications, etc.). They scanned tens of journals (a couple of personal journals, a few in the department and main scanning in the library); they used several current awareness services (scanned occasionally CC in library. Two used PHLS as their main awareness service, relevant SUBIS Bulletins were used occasionally in the library, etc.); they ordered a retrospective search approximately twice a year (when starting new research or writing review articles).

Scanning journals was said to be the most important method of following ongoing research. Personal contacts were next in importance. There are three stereotypes in the attitudes towards current awareness information services: (1) 'scanners' and occasional users of secondary services (2) broad service supporters (3) dedicated service supporters. The respondents seemed to have slightly varying attitudes towards the stereotypes, for instance, although they all scanned the journals some found it frustrating and scanning secondary index journals was found even more frustrating. There also seem to be conflicting objectives. The ideal service should be brief and dedicated, but also broad enough to give a feeling of general awareness. This may be the reason for the emphasis on scanning – it gives a feeling of awareness through physical effort. People seem also to have firm opinions that the adopted pattern was the best which means that use of services is staunch.

Two of those interviewed had followed regularly one current awareness service (PHLS Library Bulletin) and they were able to give more detailed descriptions about the value-in-use of the service. They spent some 15 minutes with this weekly bulletin and found some 5 – 10% of the references important for their work and some 20% generally interesting. In the last issue there was about ten out of 100 important references but only the other scientist looked for the original four articles. The bulletin was seen mainly as a very good means for general awareness and for producing new research ideas. It was not so much for seeking particular information. These users preferred this service to the occasionally used SUBIS Bulletins of their interest because PHLS was 'cheap and broad enough'.

Market behaviour

The scientists did not seem to have a clear idea of the current awareness service market. The pattern of use had been developed over several years using trial-and-error methods with those services which happened to be available, and the use had continued if any value-in-use had been found. Although the prices of any services available here are reasonably low compared to other research facilities used, scientists are not ready to make much effort to have a particular service even though their experiences of the service were good (this was especially a case with two potential SUBIS Bulletins users). This follows the common understanding that the economics of research work is not developed in the area of information. It also seems that scientists rely (or have to rely in present circumstances) on what librarians make available for them, and try to use everything instead of thinking of the most cost-effective pattern of use for their individual purposes.

The scientists used one to five hours per week on current awareness activities (excluding reading). They found it hard to analyse the time savings and the use of several current awareness services offered. This kind of question seems to be useful when there is only one main service in use, as was the case with the two PHLS users. They estimated that the bulletin could save 15 minutes per week in library use and about the same time in browsing literature, although they said that there may be savings in, for instance, better organised reading and maintaining own files. They could not indicate any measures of these. When the use of the service takes less time than the estimated savings one could say that there is weak evidence that the value of the service is at least twice the cost – the price of the service can be excluded from calculations because it is only 40 pence per issue. On the other hand, only 5 – 25% of the time used on current awareness went to the use of this service.

It was even more difficult to obtain measures of the benefits from readings found by current awareness services. The only example mentioned would probably have been found by scanning as well. In one example an article reported similar research results elsewhere which saved about a month's work in testing the researcher's own results (this is an objective value-in-use measure). At the general level, it was easier to recall situations where some new ideas of research methods and research topics were found through current awareness services, but when something new is undertaken it is often impossible to imagine what would have been done otherwise.

The interviews supported the idea that the reason for problems in attaching exchange values to information is that users only think of value-in-use when they use information, or, even, an information service, not its exchange value. The users find it difficult to answer the questions dealing with the exchange values. Although one could easily declare that current awareness services like PHLS or SUBIS have only exchange value because the same information can also be found by other means the insufficient economic thinking of scientists makes pure exchange value studies difficult, if not impossible. Therefore, it is reasonable to describe the subjective value-in-use of these information services along with exchange value considerations, and to find examples of the objective value-in-use whenever it is possible. Still, there is a practical task for future development to educate the users of current awareness services (and the users of secondary services more generally) for the economic comparison of the services available for them to aim at more effective use of information.

Discussions

The pilot study gave support for a dual approach to the value of information problem but it also demonstrated the differences that exist between primary and secondary information considerations. The value of secondary information can be studied in terms of exchange by comparing the service to other, more or less identical, services. The problems of hypothetical questions can be reduced by asking users detailed questions about the way savings could be achieved. Answers to time saving questions seem to be much more reliable than answers to questions about willingness to pay. Because of the lack of economic awareness of subscribers of the services descriptive data about subjective value-in-use is often the best means to evaluate the services in practice and even in a more clear exchange value context the value-in-use descriptions are significant, if not at cognitive, then at 'affecting' level. It is possible to find measures of the objective value-in-use of secondary information services by time and money savings in some situations but, in practice, this is very seldom the case.

The pilot study produced data which formed the basis for a critique of some earlier studies. Subscribers of secondary information services use several services at the same time, and they are mainly interested in the information references offered. Therefore, they are seldom able to answer hypothetical questions of the value of the secondary information. More concrete questions are needed for reliable answers. 'How much money or time service x saves annually?' or, 'How much would you pay for service x ?' Such questions are unlikely to add usefully to existing knowledge. Although it is possible to advance the above mentioned recommendations for useful questions to ask, in comparison of the results one has to remember that value giving situations vary considerably. For example, such factors as the nature of the field (e.g. engineering or science), and the nature of the work (e.g. basic research or contract projects), greatly influence abilities of giving answers to the valuing questions.

There are those who advocate abandoning studies of individual users of secondary information in favour of concentrating upon markets. Thomas[16] writes about organisational buying as the decision-making process by which formal organisations establish the need for purchased products and services and identify, evaluate, and choose among alternative brands and suppliers. On the other hand, for instance, Wilson[15] emphasises the use of qualitative data about individuals in valuing information. In a study it is possible, and often necessary, to concentrate on a particular end of these extremes but it is still useful to realise that both ends exist and are of importance.

REFERENCES

1. REPO, A.J. 1986a. Economics of Information in Information Science. Espoo. Technical Research Centre of Finland Research Notes 645.
2. REPO, A.J. 1986b. Towards the analysis of the value of information – A study of some approaches taken in the literature economics, accounting and management science. Sheffield, The University of Sheffield Crus Working Paper No. 7.
3. REPO, A.J. 1986c. The Dual Approach to the Value of Information: an Appraisal of the Use and Exchange Values. Information Processing and Management 22, 5, P. 373–383.

4. HAWGOOD, J. & MORLEY, R. 1969. Project for evaluating the benefits from university libraries. London. OSTI Report No. 5056.
5. HOINVILLE, G., JOWELL, R. & ass. 1978. Survey Research Practice. London. Heinemann Educational Books.
6. NIGHTINGALE, R.A. 1973. A cost-benefit study of a manually-produced current awareness service. *Aslib Proceedings* 25, 4, p. 153–157.
7. KRAMER, J. 1971. How to survive in industry. Special Libraries, November, p. 487–489.
8. DAMMERS, H.F. 1973. Economic evaluation of current awareness systems. In. EURIM. A European Conference on Research into the Management of Information Services and Libraries. 20–22 November 1973, UNESCO, Paris. London, Aslib. p. 107–124.
9. BLICK, A.R. 1977b. Evaluating an in-house or bought-in service. *Aslib Proceedings* 29, 9, 310–319.
10. BLICK, A.R. 1977a. The value of measurement in decision making in an Information Unit – a cost benefit analysis. *Aslib Proceedings* 29, 5 p. 189–196.
11. WHITEHALL, T. 1985. Current awareness in education: an evaluation of Trent Polytechnic's Education News. *Aslib Proceedings* 37, 9, p. 355–370.
12. KING, D.W., GRIFFITHS, J-M., RODERER, N.K. & WIEDERKEHR, R.V. 1982. The value of the energy database. Oak Ridge, Tennessee. Technical Information Center, United States Department of Energy.
13. WILSON, T.D. 1982. The Evaluation of Current Awareness Services in Local Government. *Journal of Librarianship* 14, 4, p. 279–288.
14. FRANCIS, G.M., MULLINGS, C. & WILSON, T.D. 1981. A manual for the evaluation of current awareness bulletins. London. The British Library, Research & Development Reports No. 5584.
15. BITZ, A.S. & OWEN, B.S. 1981. An Approach to the Potential Importance of Information in Engineering. London. British Library Research and Development Department Report No. 5603.
16. THOMAS, R.J. 1981. Organizational Buying Behavior and STI Marketing Decisions. In. MASON, R.M. & CREPS, J.E. (ed.). Information Services: Economics, Management and Technology. Boulder, Colorado, Westview Press. p. 93–107.

APPENDIX

THE INTERVIEW SCHEDULE I:

The value of current awareness information for some scientists in biomedicine

1. INTRODUCTION
General information of the study, confidentiality, etc.

2. ABOUT THE RESEARCH ACTIVITIES AND THE USE OF CURRENT AWARENESS SERVICES
The research activities of the respondent and his general information

seeking pattern was explored; special attention was paid for the use of current awareness services.

Comment: This section gave valuable data, no problems.

3. THE MAIN RESEARCH PROJECT AND THE MOST USED CURRENT AWARENESS SERVICE

The idea was to discover how much useful information was found for a particular research project by using the main current awareness service. We were looking for examples of important primary information found by the service, time and money savings from the use, qualitative benefits, willingness to pay, etc.

> *Comment:* This section had to be discarded because respondents were all working with a set of projects and it was not possible to concentrate on a particular project. General information was obtained but the connection between research work and the information used was too weak for the resulting data to be useful.

4. MARKET SITUATION

The respondents were asked to describe how they see the service they mainly use in comparison to other similar services.

> *Comment:* Valuable information was obtained but respondents did not really seem to think of possibilities in economic terms.

5. THE DETAILED USE PATTERN OF THE MAIN CURRENT AWARENESS SERVICE

The use pattern of a particular bulletin was questioned. The idea was to obtain information of the value-in-use of the bulletin. For example the following questions were asked:

What are the general savings, if there are any, from the use of the bulletin in terms of time or money monthly?

(1) in the library use __________
(2) in browsing literature __________
(3) in reading __________
(4) in maintaining own files __________
(5) other, what __________

Do you recall any examples of the information use chain where a bulletin had the vital role (e.g. a new technique saved efforts remarkably, some experiments already done, a particularly good review found, . . .)?

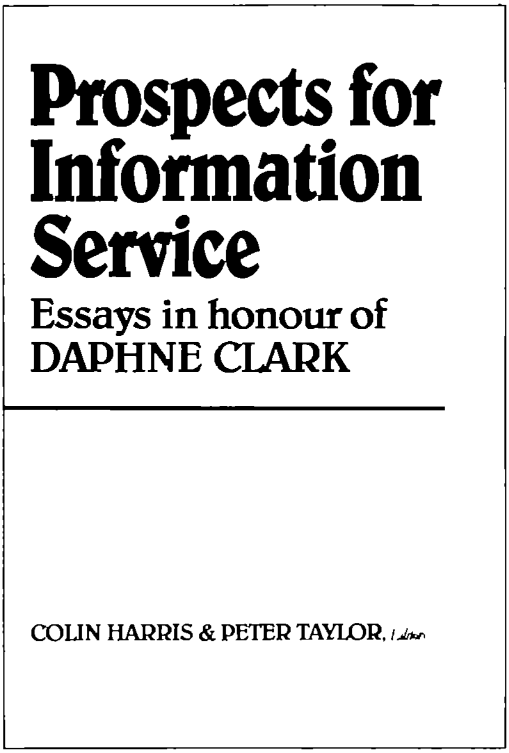
> *Comment:* Useful information was obtained though it was hard for most of the respondents to separate the role of the main current awareness service from other services and from scanning journals.

THE INTERVIEW SCHEDULE II:

The value of SUBIS bulletins – providers' view

1. HISTORY OF THE SERVICE
2. PRODUCTION AND THE CONTENT OF THE BULLETINS
3. PRODUCTION COSTS AND PRICES
4. MARKET SITUATION
5. SUBSCRIBERS AND EVALUATION OF THE SERVICE

Aslib



Prospects for Information Service

Essays in honour of DAPHNE CLARK

COLIN HARRIS & PETER TAYLOR, *Editors*

Now available from Aslib

The Association for Information Management

£15

Proceeds from the sale of this volume will be donated to the British Heart Foundation.

26 JUN 1989

Information Science in Theory and Practice

Brian and Alina Vickery

Information Science in Theory and Practice reports on the present scientific understanding of information transfer. Regarding information transfer as a human, social activity rather than concentrating upon the technology itself, **Information Science in Theory and Practice** discusses how people behave as generators, recipients and users of information; how information systems are organized and how they perform; the quantitative study of information messages; the semantic organization of messages and channels for purposes of identification by recipient and source, and problems associated with information storage, analysis and retrieval.

Information Science in Theory and Practice relates information science to sociology, psychology, economics, linguistics and other disciplines. It features user studies, investigations of system design models and of system evaluation. It draws examples from many areas of informative communication outside the field of science and technology. **Information Science in Theory and Practice** *must* be read by all forward-looking information scientists, postgraduate students of information and library science, and students of cybernetics and cognitive science.

1987 · 420 pages approx · 216 x 138mm · 0 408 10684 0 · Hardcover · Illustrated · £45.00 approx.

Butterworths Guides to Information Sources are used by subject specialists and new students alike. Each title in the 15-strong series presents a picture of the current international scene in the subject by bringing together in one volume all the many and various sources of information.

New in 1987 - Information Sources in the **Life Sciences**, in **Finance and Banking**, in the **Earth Sciences** and for **Metals and Materials**.

Butterworths

meeting professional needs

[illegible]

Aslib
PROCEEDINGS

Volume 39 Number 5 May 1987

The concept of performance: a semantic review 149
Stuart Hannabuss

Government policies and the information industry – the balance of interests 159
Lizzie Davenport and Blaise Cronin

Information for chemists: a European viewpoint 169
Monty Hyams

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **MAY 1987** **Number 5**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

The concept of performance: a semantic review

Stuart Hannabuss

School of Librarianship & Information Studies,
Robert Gordon's Institute of Technology,

The concept of performance is pluralistic and demonstrates the ability to migrate from one linguistic and semantic register to another, e.g. from profit to non-profit contexts. Usage changes denotational and connotational aspects of the concept as people, lay and information professionals, use distinct frames of meaning and employ the concept in abstract, anecdotal and other forms. Performance is a central criterion in the effectiveness of the supplier/user exchange relationship, and this criterial role implies the existence of a deep agenda in both the semantics of the concept and its use. The fact that the concept is also mobile is suggested with reference to new quantitative dimensions attributed to it by literature and practice.

The concept of performance is complex. This is because it is a pluralistic concept, consisting of several levels of interpretation, from the literal meaning of 'the doing of something' or 'an activity' to more complex meanings. Among these might be included the notion of dramatic performance, a set of actions displayed by an individual for effect, or the execution of such actions with a degree of efficiency and success.

Many meanings of performance

The plurality of the concept derives also from its use in many different contexts[1,2,3,4,5,6]. In some, performance might be a term of praise, coupled with adjectives like good or enjoyable. In others, it might be pejorative, implying unnecessary fuss and bravura. Practitioners in different settings tend to use the concept in various ways. There is the manager who might emphasise performance as a way towards profitability for his company or a personnel supervisor who looks to her staff for certain levels of output and efficiency. A scholar might consider performance in another sense, to suggest the extent to which an argument holds true and valid, or a document manages to deliver the goods. Here we have rather specialised applications of the concept of performance, in which it becomes leavened with (or even co-extensive with) other concepts like truth, integrity and even availability.

It is possible to envisage 'performance' as a designation for something which is good, cheap and fast. Qualities such as these typify what many people want of products they buy or activities they carry out. Of course, concepts like good, cheap and fast are protean, changing according to

Aslib Proceedings, 39 (5), May 1987, p 149–158 Printed in Great Britain

point of view or situation, so that cheap might in fact be reasonable or economical, not cheap and nasty and fast is but not at the expense of what is good. Built into the concept of performance, then, are other concepts which people attribute to it and which they need in order to help them define and personalise it for themselves.

Nevertheless, most practitioners move in an environment of specialised vocabulary, and work at activities with their own lexicons and registers. For this reason, concepts like good and cheap are re-designated in the argot of the work-place and become words like 'utility' and 'cost-benefit' and 'cost-effectiveness'. In this way, concepts become usable and acceptable in their particular settings, although the speakers usually revert to commoner words in domestic and personal situations. There is a kind of bilingualism at work.

Many of these concepts are used in context, not just of work but also of other concepts and within a matrix of spoken speech. Not only are there the usual denotations and connotations suggested by this, but also it's common to find that concepts support each other, and in fact help to define and delimit each other. Writers often, when they introduce a concept like 'performance' to a readership which they believe will find some semantic difficulty with it, define it and offer a range of alternatives and synonyms for the reader's attention. For instance, we read '... there seems to be little agreement about the basic terminology, so that we are left without generally evaluated and accepted definitions of such concepts as performance measures, effectiveness criterion, value, satisfaction, benefit and impact'[7]. Readers may find it even more useful to see such concepts demonstrated in working language contexts, where any obscurity or contentiousness associated with individual definition can be smoothed. We find authors defining concepts then suggesting how the words which represent them may actually be used. 'Putting the four words in one sentence may help to explain how they differ: the results of measurement can be used to evaluate the performance of a library and thereby determine whether or not it is effective'[8]. In this way the author seeks to make clear what the words 'measurement', 'performance', 'evaluation', and 'effective' signify.

Performance, profit and productivity

Concepts like performance, are not only pluralistic in their meanings and diverse in their usage, but they also exhibit mobility. They share this faculty with many others, of course, although the multi-disciplinary character of the concept of performance (compare other such concepts like system and communication) encourages us to suggest that this mobility is greater than usual. This mobility is made all the greater because the concept of performance is used in specialised *and* ordinary linguistic settings. When concepts exhibit mobility, they show an ability to migrate. Performance shows this ability, if we consider one major meaning of performance, which entails doing something in a particular way with a

WHEN IT COMES TO CATALOGUE DATA

DON'T STAND ALONE!

Save yourself valuable time and effort by using the authoritative MARC records available from the British Library.

Rely on us for:

- **Comprehensive coverage**

Over 5 million citations for UK, American and other non-UK books

- **High quality cataloguing**

Full AACR2 standards on all major files, with extensive subject indexing, including Dewey and Library of Congress subject data

- **Service patterns to meet your needs**

Economical annual tape services offer you block purchase of data for speedy file building

Batch selection service for easy retrospective conversion

Online service for immediate selection of items to match stock

- **Effective and reliable service**

Our tried and tested services with efficient, professional support, are based on nearly 20 years of experience

---

For more information on how these services can help you, please contact:

Jeremy Rosie
Marketing and Support Group
The British Library
2 Sheraton Street
London W1V 4BH
Tel· 01-323 7078

BL

Bibliographic services

particular end in view. The lexicographic profile of the word shows a strong association with the notion of activity undertaken with profit in view. So we encounter the concept in many management textbooks. Classically, Peter Drucker uses the concept of performance in this way. For instance, in his collection of essays called *People and performance*, he says 'in business enterprise economic performance is the rationale and purpose'[9]. He equates results and performance and suggests that, along with other factors like work and decisions, performance of that type characterises the organisation. Similarly, we find in other writers the equation of performance to productivity or profitability, to yield over an accounting period[10] or to the attainment of economy of operation in the management process[11].

Such interpretations and usages are not, of course, the only ones or the major ones. They concern us here since we are looking at the concept of performance from a management perspective. With this in mind we realise the heavy bias of practitioner lexical and belief systems on word usage, and here we see the almost inevitable attribution of profit and productivity to the concept of performance. However, it is possible to see the concept of performance in non-profit settings, particularly when applied to organisations like hospitals. There the 'good' derived from effective performance argues the presence of concepts such as public benefit and service, even though the notion of performance is not deformed beyond recognition: it remains highly active in the area of accountability and cost-effectiveness, which all tax-payers arguably want public services to demonstrate, and in recent years in the UK we may push this further by suggesting that the concept of performance has begun to take on profit overtones, because of managerial practices and attitudes in health services.

Users are often keenly aware of such changes in meaning and usage, of the mobility and migratory nature of concepts like this. Writers refer to key documents as if, like citational trees, there the new meaning started and things have been subtly different since then. We find statements which confirm this view in many places, such as '... performance measures were a landmark because they brought research to bear for the first time upon the problem of measuring the effectiveness of public library services'[12]. There is an explicit reference in the text to the source, in fact the *locus classicus*, which forms the subject of the remark. Writers are also historiographers and lexicographers of their art, generally by implication since most of them do not set out to write mainly about language or the language they use. Bommer and his collaborators[13], for example, seek to move from what he calls traditional approaches, to library performance measures, to modern ones by recommending that '... in order to provide library users with access to a published information base that is growing at a continuous and awesome rate, it is vital that decisions and plans be made which allocate the library's available resources in the most efficient and effective manner ... the need for objective criteria for allocating available resources ...', an argument which takes us back to performance measures and, more important, what Bommer *et al* want us to mean by them.

Usage defines meaning

We often find, therefore, that words mean things but that their users want them changed. This is because the activities, attitudes and value systems which the concepts represent and symbolise are being changed in themselves, and language and thinking keeps pace with events. So far we have seen that writers and practitioners, when faced with a pluralistic concept like performance, do things to it and are well aware of the need to subordinate words and concepts to the imperatives of communication and use.

Another interesting feature of concept use and definition, which also reveals this practitioner bias, is seen in the way in which people in information work, who in many cases accept the use or utility of concepts like performance, define it and use it in terms of what they regard as its component parts, just as if a factory job could be built up from lots of different actions. This process, in semantic terms, often demonstrates the anecdotal origins of many practitioners' thinking processes, as they reflect upon their own experiences and perhaps even recall them in quasi-visual terms. So we might find this in writers who seek to define performance in particular library situations. In reference work, for example, one writer[14] offers up as evidence for being a 'good' reference librarian such component skills as 'the ability to organize data and information for people to use', and develops this argument in the same style. Important traits of such good reference librarians are listed (listing in itself being a revealing deictic strategy in discourse) as 'imagination, perseverance, judgement, accuracy, thoroughness and orderliness . . .'. Perhaps handling concepts is influenced among such writers by the urge to be completely clear for their readers, or even from conditioning built into their own jobs, perhaps derived from the orderly arrangement of information and documents, or from work putting together jobs as job descriptions/specifications. In whatever way, the perception and concept of 'performance' are affected by such factors.

The component factors discussed here were all rather concrete: they could be shown by people on the job and no unusual skill with words is needed to use the concepts accurately. The component factors of performance can be expressed in a more abstract manner, even though the procedures, implicit in how they are expressed, remain rather simple. For instance, it is easy to express performance in terms of other concepts like efficiency and effectiveness, which many writers do. They may be generalised from concepts, applicable to all and any library or management situation, and imply no heavy leavening of profit or non-profit, unless the user chooses to give them one. Yet, in fact, they exist at one remove from the concrete terminology which practitioners would use to define and describe their actual jobs, and this is what makes them more abstract. Also, a number of practitioners would not customarily use such abstract terms, preferring more concrete ones, or even distrusting the associations (the perceived semantic pedigree) of concepts, which they felt were migrating from other areas of experience or other disciplines (e.g. sociology, psychology, management, economics, cybernetics, etc). It might reveal both a conservative instinct among certain professional groups with their linguistic and conceptual codes and mores *and* a disinclination to speak in abstract terms about what is better defined concretely[15].

Yet we need to probe the beast even more fully to reach the heart of the matter. The concepts people use, the revelations about conceptions they hold about those concepts, are interesting cognitive barometers. In examining the ways in which library and information managers, both practitioners and academics, talk about performance and its associated concepts, we see under the verbiage that some essential relationships or nexus strands emerge. One of these rests in the proposition that performance is the degree to which the system contributes to user needs. This sentiment emerges frequently in both talk and literature – 'the interaction between users .. and the providers (library and academic staff) is likely to be effective in highlighting any problems'[16] '... it can be regarded as the bringing together of a patron need and the information stored in one or more books or documents'[17]. This view of performance is customary, too, when people speak about performance of information retrieval systems, where they stress how performance is built up around relevance, precision and recall.

Deep agenda of concept networks

If it is possible to assume that at the heart of the concept performance lies the notion of a provider serving a user, this is of value to us in two ways: as a sign of what experts regard as central to their mystery; as an important token of how deep agenda operate to influence and manipulate the surface levels of language and expression. The suggestion is that the concept performance is most revealingly discussed and used when we envisage it as having such a deep agenda, rather like sentences having a Chomskyan deep structure, and in this case an important part of that deep agenda rests on the notion of provider serving user. It could alternatively, be expressed as an exchange relationship, the exchange resting partly on the actual supply of information from one to the other, and partly on the response and non-response and perceived benefit which the one sees in the other (*ergo* which the other supplies to the one).

This view of deep agenda could also be seen as implicit ways in which people think about themselves in particular professional spheres, as well, of course, as the intellectual associations and belief-systems which such people draw upon. Bommer[18] demonstrates this facility when he speaks about performance as an essentially user-orientated concept, and backs up his case by speaking about concepts normally (within the professional parameters and expectations of this field) associated with it, like utilisation, availability, completeness, relevance and cost. These demonstrate the central assumption that, whatever else we care to make performance into, it is essentially that, the degree to which the system contributes to user needs. Even modifications of this central notion accept its basic validity: when Naylor[19] talks about 'impact', he is in fact suggesting that the concept performance can be equated with the concept of impact, for unless performance is visualised as impact upon users, with user benefit in mind, the very notion of performance itself becomes distorted or impoverished.

This notion of impoverishment is of interest in itself. In many fields, disputes between skilled users of professional argot arise on possible or needed or undesirable changes to the meanings of words, and are often symptomatic of debates about the phenomena and attitudes and research methodologies which they represent or gloss. There is no doubt that the concept *performance* has changed in the last 20 years, both in academe and in practice. Its generalist character, signifying the good a service might do for its clientele, has been sharpened by the injection of quantitative thinking. The trend is largely due to increasing emphasis in library and information work upon the managerial approach and its quantitative assumptions and methods. We find this reflected in the definitions which writers use. General usages can easily be found, e.g. we read that performance can be seen in relation to objectives which an organisation sets for itself, objectives which form yardsticks against which performance can be assessed. Despite its atmosphere of quantitative measurement, this statement is in fact very unfocused: its yardsticks are mere metaphors, and its assessment is diffusely conceived, perhaps in terms of managers looking at performance using experience, judgement and hunches and coming to a snap decision. In any event, the ramifications, particularly those in terms of quantitative analysis, are not just absent: they are not even hinted at; they seem to be no part of whatever deep agenda exists under the proposition.

Quantitative indicators

We see that definitions of performance begin to change as writers move through the 1970s and 1980s. Performance measures are defined, in 1982, as 'being the process of systematically assessing effectiveness against a predetermined norm, standard or expressed goal'[20]. Systematically the adverb is very revealing, suggesting quantitative approaches are not just desirable but customary (a much more revealing criterion), and, while admitting general concepts like goals, emphasising norms and standards which are consensually agreed as being more technical and precise and objective. Overt statements about the quantitative character of performance measures can readily be found in the literature. For example, Charles McClure says that 'performance measures are quantitative indicators of an organisation's ability to accomplish objectives and respond to the needs of individuals using the system'[21]. Here we see how assumptions are readily made about the general acceptance of the deep agenda and how not just individual concepts but whole systems of concepts have migrated from classical management to public sector management, suggesting new linguistic norms and professional self-concepts.

The definitional and conceptual strategies which have been discussed here can be found in many contemporary sources. In fact, the thought patterns of many writers reflect the drift described in this paper. Performance can first be defined in terms of inputs and outputs[22] breaking the concept into traditional components *and* at the same time reflecting an awareness of abstract/concrete dimensions to the concept. The concept is further contextualised by showing how good performance will lead to organisational effectiveness and will provide a sound basis for planning. The discussion continues '... performance measurement involves the establishment of library objectives based on user needs, the expression of these objectives in quantifiable units, the measurement of the units, and the assessment of library performance vis-a-vis its stated objectives'. We find this concept elsewhere too[23,24].

We find this in different forms of argument, where the way in which the writer argues his case reveals how he conceptualises about performance *and* about its matrix of associated concepts as they are seen by fellow professionals. We see this in Hamburg *et al*[25] where the argument starts by considering performance in terms of social objectives. It is argued that a clear view of performance cannot be found in that way. So we are told *to step back* 'in order to measure these ultimate benefits in a less direct, but perhaps more feasible manner'. The advice given focuses upon the interface between supplier and user, but even here 'it is difficult to isolate library effects from effects' of other types. So '*taking one more small step back from ultimate benefits*, we focus upon the *sine qua non* of library activity, the most important aspect of all public and university library objectives – *exposure of individuals to documents of recorded human experience*'. The movement of the argument *and* the implications for concept use here are very interesting. Procedurally, the writer decides that, unless these steps back are taken, no real clarification of the concept in real terms can be made. Then there is, substantively, a set of definitional assumptions made about what performance is and how it can be defined by its cognate concepts. Generalistic conceptions of the concept of performance have now been jettisoned in favour of quantitative ones, hence the two steps back which the writer suggests we take. Also important is the notion that having taken these steps back, there is a *sine qua non* to be found there. Without that it is argued, there is nothing.

Is this the deep agenda to which we referred earlier? It could well be. In current thinking about concepts like performance, consensual usage would recommend, and give credence to, an essentially quantitative conception of the concept of performance. If that dimension is removed, all we arguably have is feathers, or traditionalistic meanings which have been superseded. The extent to which such conceptions are generally held needs research. It could be that other fashions or schools of thought would reject such an argument and wish to dissociate themselves from it. Moreover, it is fair to say, that taken to its ultimate extreme, the quantitative approach to performance might become merely mathematical and ignore the valuable components of experience and judgement[26].

Looking at the notion or conception of performance, we can see that it is pluralistic and migratory, has been used theoretically amd empirically, has been defined by its components and by its associates, and has been the subject of historiographic attention. More important, it has moved with the times, or been moved by them, in acquiring greater quotients of quantitative management, and in demonstrating less power to convince without them. Most of all, it is possible to argue that deep agenda or *sine qua non* dimensions exist in, or are attributed to, such concepts as performance, whether subjectively by users or more definitively in a dictionary sense, and that the elicitation of those deep agenda may well prove the most interesting part of the search.

REFERENCES

1. DANIEL, E.H. *Performance measures for school librarians: complexities and potential.* pp 1–51 of VOIGT, M.J. & HARRIS, M.H. eds. *Advances in librarianship*, volume 6, Academic Press, 1976.
2. DU MONT, R.R. & DU MONT, P.F. *Measuring library effectiveness: a review and an assessment.* pp 103–141 of HARRIS, M.H. ed. *Advances in librarianship*, volume 9, Academic Press, 1979.
3. HINDLE, A. & RAPER, D. *The economics of information.* pp 27–54 of WILLIAMS, M.E. ed. Annual review of information science and technology, volume 11, ASIS, 1976.
4. ORR, R.H. Measuring the goodness of library services. *Journal of Documentation* 29(3) 1973 315–32) (reprinted in *Progress in Documentation: some themes and topics*, Aslib, 1981).
5. WALDHART, T.J. & MARCUM, T.P. *Productivity measurement in academic libraries.* pp 53–78 of VOIGT M.J. & HARRIS, M.H. eds. *Advances in librarianship*, volume 6, Academic Press, 1976.
6. WARD, P. LAYZELL comp. *Performance measures and criteria for libraries: a survey and bibliography.* PLRG Occasional paper No. 3, Public Libraries Research Group, 1976.
7. ROBERTS, S.A. *Cost management for library and information services.* Butterworths, 1986, 19.
8. LYNCH, M.J. Measurement of public library activity. *Wilson Library Bulletin* 57(5) Jan 1983 388–93.
9. DRUCKER, P.F. *People and performance.* Heinemann, 1977, 28.
10. ROY, R.H. *The cultures of management.* Johns Hopkins University Press, 1977, 177, 213.
11. BRECH, E.F.L., ed. *The principles and practice of management.* Longman, 3rd ed., 1975, 31, 74.

12. DETWEILER, M.J. *Availability of materials in public libraries.* pp 75–83 of American Library Assn: *Library effectiveness: a state of the art. ALA.* 1980.
13. BOMMER, M.R. and others: Performance assessment model for academic libraries *JASIS* 30(2) Mar 1979 93–9.
14. ADAMS, M. *and* JUDD, B. *Evaluating reference librarians.* pp 131–45 of *The Reference Librarian* 11 Fall/Winter 1984.
15. BLAGDEN, J. *Do we really need libraries?* Bingley, 1980, 47–59.
16. CLAYTON, K. *Libraries and research.* UC & R Newsletter 14, Nov 1984, 6–11.
17. KANTOR, P.B. *Analyzing the availability of reference services.* pp 131–49 of American Library Assn: *Library effectiveness: a state of the art.* ALA., 1980.
18. BOMMER, M.R. and others: op.cit.
19. NAYLOR, B. *Library output and performance measures.* UC & R Newsletter 18, Feb 1986, 5–9.
20. CRONIN, B. Performance measurement and information management. *Aslib Proceedings* 34(5) May 1982 227–36.
21. MCCLURE, C.R. Management information for decision making. page 21 in *Advances in librarianship* 13, ed W. Simonton, Academic Press, 1984.
22. MCCLURE, C.R. & REIFSNYDER, B. *Performance measures for corporate information centers.* Special Libraries 75(3), July 1984, 193–204.
23. LEVINE, M.M. *The circulation/acquisition ratio: an input/output measure for libraries' Information Processing & Management.* 16, 1980, 313–15.
24. DANIEL, E. Performance measures for school librarians, page 27 in *Advances in librarianship.* 6, eds M.J. VOIGT & M.H. HARRIS, Academic Press, 1976.
25. HAMBURG, M. and others. Library objectives and performance measures and their use in decision making. *Library Quarterly* 42(1), Jan 1972, 107–28.
26. REVILL, D.H. *Performance assessment in academic libraries.* pp 47–45 of BLAGDEN, J. ed. *Do we really need libraries?* Cranfield, 1983 and REVILL, D.H. *The measurement of performance.* pp 104–34 of COWLEY, J. ed. *The management of polytechnic libraries.* Gower/COPOL, 1985.

Government policies and the information industry – the balance of interests

Lizzie Davenport & Blaise Cronin

Department of Information Science
Strathclyde Business School

Background

Recent shifts in the corporate configuration of the information industry are part of a spate of mergers, acquisitions and divestitures in the last five years of business history[1]. The turbulence is due, according to some analysts, to the opening of the regulatory floodgates by the current US administration. But the phenomenon is transnational, and, arguably, is as much due to the strategic fall-out of multinational enterprise in a turbulent global climate. Libertarian rhetoric may colour the interpretation of events, but it does not totally shape them.

Administrations in the US, UK, and, most recently, France, advertise the benefits arising from the free play of market forces, and ‘free enterprise, competition and free trade with a minimum of government regulation’[2], but these benefits may not always be realised because of obstacles in the market terrain. These include (a) the entrenched and dominant position of IBM, and AT&T (b) the lack of coherent US policy (which has resulted in partial deregulation and the arbitrary advancement of some corporations – the successful lobbyists) (c) the promotion of state-supported national information industries in Europe and Japan.

An important thread in the web of the information industry is the strategic convergence of hardware, transmission and content services which increasingly takes the form of corporate vertical integration. Another feature of this capital-intensive field is oligopoly: few solo companies can aggregate resources on a scale which allows them to compete effectively – the rest may resort to co-operative ventures to stake a claim. What movement there is will take place at the bottom of the market, the realm of the small entrepreneur, or in areas in which IBM and AT&T are late entrants, for example, neither has yet staked a major claim in electronic publishing. Companies in these niches may merge with each other, or become the prey of corporations higher up the industry ladder who are keen to enhance their vertical standing.

The dilemmas of decision makers

With such an uneven and intractable terrain, a policy which reconciles the rhetoric of the free market with practicable proposals is difficult to formulate, let alone sustain, and the inadequacy of existing procedures is

Aslib Proceedings 39 (5) May 1987 p 159–167 Printed in Great Britain

increasingly apparent. It is difficult to assess the payoff of different strategies: steps taken to advance a particular position (e.g. reducing the domestic dominance of IBM), may diminish advantage elsewhere (such moves would erode the main bulwark against Japanese competition); the divestiture of AT&T (to enhance the market for VANs) has allowed its deregulated subsidiaries to feast on imported components which, in turn, depresses the domestic industry.

In the US and UK policy-makers are tied by tradition to a compartmentalised secretariat, and must constantly balance the interests of their executive departments. The information industry has moved towards 'bundling' of services and products, and cannot be adequately regulated by segmented government agencies. The juggling of internal government interests is paralleled in the handling of outside pressure groups. Decisions must be taken which accommodate interests at different levels, with controversy often the result.

In a recent UK case, the interests of the consumer (RAF) searching for an effective sensor system provided by a US firm in the face of competition from a domestic producer (GEC) have been placed before the interests of national industry, namely GEC's aspirations to global status in leading edge technology[3]. Yet the UK government has shown willing in its support of infant industry in the hi-tech sector (prompted by an ideological commitment to entrepreneurism), but the case of INMOS, rescued by Thorn/EMI after the withdrawal of initial support, illustrates the dangers of this policy. The company is now something of a problem for its parent[4]. The critical development stage, where a company progresses from ugly duckling, deserving of support, to lame duck, is not well defined.

The diffusion of authority, which offers a congenial climate for the freeplay of market forces, should not be seen by the public as confusion. With elected governments, the prospect of losing public support must ultimately force policy decisions to some sort of equilibrium. For example, protectionism, which may conserve jobs, can lead to higher prices which may lead to import controls being lifted to pander to consumer demand. The national interest remains an unshakeable shibboleth – the information industry, however, with its global alliances (in R&D, production, distribution, marketing and advertising) makes geopolitical distinctions increasingly irrelevant[5]. How can effective policy be framed in the traditional terms of political discourse and effected through traditional institutions when dealing with stateless, transnational corporations whose markets know no boundaries?

Agencies of entropy

Comprehensive policy-making in the US is confused by a multiplicity of agencies. Tunstall[6] describes the five main forums for US policy – the White House, Congress, the courts, federal agencies and the lobbies. These can be reduced to three competing arenas for discussion of the information sector: strategic (the Pentagon), diplomatic (the State Department) and trade (the Commerce Department). Domestic communications are in the hands of the NTIA (National Telegraphs and Information Administration) which operates under Commerce, but the Federal Communications Commission (FCC) is highly active in this area, while the NTIA and Commerce are increasingly in conflict with the State Department, as transmission is globalised.

A glance at the roll call for the SIG (Senior Interagency Group – an advisory body on international communications) reveals the extent of the fragmentation: Department of Commerce, NTIA, Bureau for International Broadcasting, Office of Management and Budget, United States Information Agency, National Security Council, Department of State, National Aeronautics and Space Administration, Department of Defense, US Trade Representative, Agency for International Development (part of State), and the Office of Science and Technology Policy[7].

Some consequences of policy disaggregation are described by Pitt, citing the work of the Berkeley Round Table on the international economy. Damaging effects include a publicly perceived lack of direction and the mobilisation of bias at the time of key legislative decisions. The Department of Defense, and the Department of Commerce, both of whose interests were at stake, were by-passed by the Department of Justice, at the time of the divestiture of AT&T, while the symbiosis of that organisation and the FCC was only too evident. Pitt is confident that the 'pluralistic and contestable' domain of telecommunications can be successfully regulated by emergent dominant agency, but his suggestion[8] of the Department of Defense as a contender is open to question: political repercussions may prevent a move which could be perceived as undemocratic.

To the list of players in the policy field (government agencies, trade associations and the press) who mould public and professional opinion, must be added the consumer. Enhanced representation for consumer groups in both government and commercial policy-making could produce more coherent and comprehensive strategies to replace the *ad hoc* decisions which result from lobbying, their current channel of influence[9].

Lobbies – the levers of power

Lobbying is big business in the US and is an accepted part of the legislative process. Tunstall[10] maintains that lobbies are 'the key determinants of the communications policy' and the key 'levers of power'. The commercial interests which are re-staking the information terrain are the dominant lobbying forces, and lobbying is a function which allows them to effectively manipulate issues intermingling political, technological and market forces. By comparison with the long-established and experienced professional expertise of the major lobbies, official agencies appear amateurish, fragmented, over-specialised and disadvantaged by their short-term view – defects which have been exacerbated by rigorous government staffing and expenditure cuts. Spreading of staff and lack of expertise have led many judges to make decisions on the basis of specialist information supplied by legally deployed lobbies.

Lobbying in the US takes place at many different levels: unilateral national lobbying (Japan); multilateral international lobbying (on behalf of UNESCO, ITU, or INTELSAT); individual corporate lobbying (AT&T), or professional body lobbying (the preferred mode of operation of IBM). Japanese expenditure on lobbying is extensive; Tunstall estimated it at $19.9m in 1984, while Larsen and Rogers suggest that over 140 representatives spent $34m. Many of these are likely to have been associations of importers and dealers, or US subsidiaries of Japanese companies[11].

At the international level, lobbying on behalf of INTELSAT's monopoly of international satellite transmission was unsuccessful – the Reagan administration maintained that it was technically feasible, economically desirable and in the national interest to allow entry by US firms into the international satellite field. The decision-makers in this instance ignored the dual threat of import penetration and enlarged membership of INTERSPUTNIK (the Soviet rival), which would arise from the fact that many Third World countries could not afford competitive prices for satellite space[12]. Lobbying on behalf of the ITU (International Telecommunications Union) was successful, however. Commercial companies have increased their representation on this body, being appalled at the potential damage to standards if the US were to pull out – standards being the *sine qua non* of global telecommunications. Government officials, however, appear to have been unaware of the consequences of withdrawal.

The acme of lobbying technique is reached in the giant corporations. AT&T, in its pre-divestiture days, had a designated intermediary with every member of Congress, and Congressional lobbying was part of the executive development programme for rising Bell managers, who were also encouraged to join local probus (i.e. professional) clubs to ensure familiarity with future political stars. A class of generalist 'superlobbyists' has arisen, often with previous government experience, acting alone or in concert with law firms. One of these, Wiley, has among its clients CBS, INTELSAT, COMSAT, GTE and XEROX[13]. A spectacular victory was won by a lobby NCTA (National Cable TV Association) and lawyer coalition in 1982 when AT&T was debarred from electronic publishing for seven years (the yellow pages of the phone book in particular) after the FCC had sanctioned this in its Computer II policy statement. This ruling has since been revoked to allow AT&T greater market manoeuvrability.

As each technical innovation raises new legislative problems, new lobbies and coalitions of lobbies rise to the bait. Tunstall is alarmed by the focusing on narrow fronts of interest, and the dominance of organised bodies rather than individuals, as they can lead to a ranking of lobbyists/politicians against bureaucrats. The combination of lobbyist and politician influences corporate strategy; the former represent private interests and the latter can ensure that these interests are carried in policy decisions.

UK policy

In the UK, information policy is similarly bedevilled by an array of agencies and legislative bodies – these include the Department of Trade

& Industry, the Office of Arts & Libraries, the Cabinet Office, the Office of Fair Trading, OFTEL, the City Takeover Panel and the Monopolies and Mergers Commission[14]. Lobbying is not as established political practice in the UK as in the US, and the public part of it must remain non-commercial to protect the integrity of MPs, but CICI, a recently formed information and communications industry association (with commercial and public sector representation), seems capable of at least partly filling this void.

Recent moves involving GEC in the UK may serve as an illustration. In August 1986, GEC's bid for Plessey was blocked by the Monopolies and Mergers Commission. The decision dismayed analysts of the electronics industry, as it diminishes the prospects of a UK firm with the capacity to compete at global level. This affair also illustrated the conflict of interest in different government departments – the MOD and DTI. Both had been involved in the tussle over Westland Helicopters, and differed in their evidence on the importance of competition in procurement, with the MOD/Plessey aligned against the DTI/GEC. The case against the merger might be described as specious, as single suppliers already operate in effect in many sectors of defence procurement. The proposed joint company would have been one fifth the size of AT&T and twelfth in the world computer/communications league[15].

In December 1986, the government blighted the company's global prospects further in its choice of radar-bearing aircraft — AWACS (from the US firm Boeing) and not GEC's; NIMROD will serve the RAF. The move may be based on some prescient internationalism, but the stated reason is the 'greater efficiency' of the American model. Some vocal elected representatives have declared that national interest should have prevailed, and GEC given leeway to improve their product.

Conflicts of interest: telecommunications

Telecommunications is an area where the clash of interests between executive departments is most apparent, as it is one where government intervention has been significant. Partial deregulation in the UK and the US, however, retains a tutelary function for government agencies who oversee the common carrier functions of the former monopolies, and legislation has been designed to protect the market share of competitors who do not enjoy the advantages of cross-subsidy.

The inconvenience and tardiness of common carrier services, which have prompted commercial users' demands for bypass, have not been adequately addressed by government, and, in the US, administrative topology has confused the issue. The myth that individual domestic (rural) consumers are subsidised by other services, e.g. long distance business, has recently been exploded and this may strengthen the case against erosion of basic services[16].

There is a danger that over-protection of new entrants may disadvantage the divested or deregulated former monopolies. Such apparent disadvantage underlies OFTEL's current review of BT's stake of the UK terrain, and the premature release (on appeal) of the BOCs (Bell Operating Companies) from boundary restrictions imposed by Judge Greene's divestiture ruling. A more detailed description of deregulation in the US and UK illustrates these points.

AT&T

In August 1983, the final settlement of the anti-trust action (started in 1979) split AT&T, which had enjoyed a virtual monopoly of telecommunication services since the establishment of the FCC in 1934. The company was divided into 22 operating companies, and seven regional associations – the BOCs. This judgment may well revolutionise the information industry, which now operates in a context of dynamic segmentation and competition and the catalytic effect of deregulation on corporate configuration cannot be overstressed – a Pandora's box of integrated services has been opened[17].

Technological push caused the fragmentation of the company, and the first attempts to erode its quasi monopoly were from new-tech companies – Carterphone (marketing a mobile radio link in 1969), and MCI (offering microwave interaction between Chicago and St Louis in 1971). Specialist carrier interests were competing on AT&T's long lines in the 1970s and an anti-trust action launched by GTE and ITT was settled in their favour in 1975. Emphasis on bypass services which can exploit new technology at the expense of 'MA Bell' traditional services is not in the interest of the domestic consumer who may not be able to afford value-added networks.

Problems of regulation within the newly demarcated operating companies remain. AT&T's dominance of the domestic long distance telephone market has recently been challenged: unless an alternative service was specified, callers were linked to AT&T by default, but by the end of 1986, 90 per cent of callers should have equal access to MCI and AT&T, with equal access to US Sprint by 1987[18]. Judge Greene, the architect of divestiture, had restricted the operations of regional companies outside their established territories, but a recent appeal against this decision proved successful.

The conflict of interests in telecommunications extends to the consumer, with basic services, protected to some extent in the US by the PUC (Public Utility Commission) pitted against the value-added services required by business – a lucrative field in which the newly divested BOCs would like to expand their operations. The PUC and BOCs are engaged in a struggle to balance the provision of common carrier services at a reasonable rate with investment in new development to sustain commercial viability. Some states restrict access to common lines for vendors of value-added services, but this may be by-passed by companies using spurious inter-state credentials which remove them from restrictive state jurisdiction, though their customers are expected to pay for this technical and legal footwork[19]. The situation is further complicated by the redrawing of the administrative map and the formation of LATAs (Local Access and Transport Areas) where BOCs compete with other common carriers. The FCC appears unfitted to the regulation of the dynamic and complex ecosystem which it nominally controls.

The UK

Deregulation in the UK has been by privatisation, a path also followed by Japan, and the emergent competitor company in the UK, Mercury, has been given the chance to expand in joint ventures with, for example ITT, in satellite broadcasting where its larger rival has been blocked (BT was refused permission for a similar venture with IBM, but has since linked with MITEL). Mercury's parent, Cable and Wireless, was itself a government nationalised company with a large portfolio of colonial operations until 1981. The free market which the UK government has engineered in telecommunications is a synthetic duopoly. The only viable competitor against the existing operator had to be chosen and structured with care. A start-up could not compete, and assets and expertise could only come from outside the domestic area: the choice of Cable and Wireless as a parent was thus highly strategic[20].

Bypass satellite services (for finance and document delivery) are encouraged in the UK, and further liberalising legislation for VANs (since 1981, 600 services have been established) has been enacted. But the hoped-for expansion of optical cable into a national network has not happened. Capital (which was partly to be provided by local business consortia) has not appeared, and Mercury will supply operating networks in limited but lucrative areas – the City and a double loop in the Midlands[21].

Direct competition between Mercury and BT in many sectors is producing classic consumer benefits in terms of price cutting and differentiated services. Mercury entered direct dial-up data services (in addition to its existing leased-line service) in May 1986 and planned to offer full PSS service, in a venture between Cable and Wireless and STC, including ICLs packet data network, and leased BT lines. Mercury's advantages of low overheads and new-technology networks (optical fibre, digital exchange, microwave and satellite) are enhanced by itemised billing and substantial discounts on BT tariffs (many calls are carried by the former monopoly)[22].

British Telecom has retaliated with proposed new tariffs, currently under review by OFTEL, which will reduce prices on long distance trunk routes, and erode Mercury's advantages in the 2200 and 2100 services. OFTEL will also report on the larger aspects of BT's pricing policy (still regulated to some extent by the RPI-X formula which links changes to movements in the retail price index and acts to some extent as a safety net for the domestic consumer).

What is to be done

Any change in general policy for the information industry, reconciling inequalities of authority and resources, must involve pruning of the sprawling hierarchy of government departments currently involved in regulation. This operation will not lack a theoretical basis – a literature of alexandrine proportions advocating flexibility in the management of change exists[23]. In both the US and the UK, administrations have paid lip service to a holistic approach to information policy in commissioned reports which identify significant issues and recommend executive action. In 1981, the US Office of Technology Assessment identified 14 issue areas involving multiple participants in government at state, federal and international levels[24]. In the UK there have been various reports addressing information policy matters (e.g. Hunt, Alvey, Peacock and two by ITAP[25]), and most recently the ESRC has initiated a programme for comprehensive study of information policy with a proposed network of six research centres to 'lead to the creation of effective policies to cope with the challenge posed by the new technologies'. Such a development was suggested in ITAP's 1983 report[26].

One solution to policy fragmentation is the creation of agencies with a comprehensive remit, by means of integrative legislation, but establishing these will be time-consuming. The due process of legislative procedure is an inadequate mechanism in the context of greatly accelerated changes of circumstance. Such an extension of legislative bypass may be held to smack of emergency powers, and it has hitherto been the prerogative of departments whose concern is national security. The alteration of administrative structure and habits of mind which must accompany such fiats will be difficult to achieve.

Also, the barriers which segment strategic thinking will be harder to break than systemic structure. The inadequacy of market share as a criterion of policy in a field which shows differential development and vertical integration is obvious. Horizontal market share is a traditional criterion for the decisions of the Monopolies and Mergers Commission in the UK, which is based on an astygmatic perception of industry as homogeneous, but is inadequate in a field which shows differential development and a fondness for vertical integration. Where the information industry has matured, it requires players of proven dimensions, and these must be allowed to aggregate without impediment.

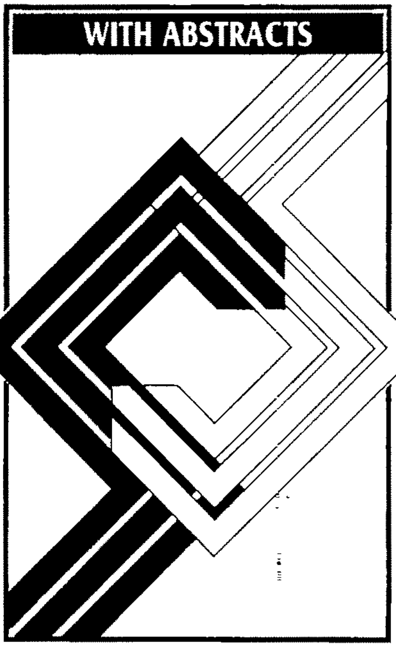
REFERENCES

1. Baxter, A. The takeover fever in Wall Street. *Financial Times* Mergers and Acquisitions. July/August, 1985. ix-xi.
2. Tunstall, J. *Communications deregulation: the unleashing of America's communications industry*. Oxford: Blackwell, 1986, 201.
3. See Levi, J. Crossed lines over GEC and Plessey. *The Observer*, Sunday 10 August, 1986.
4. Thorn/EMI. Annual Report. 1986.
5. Doz, Y. *Strategic management in multinational companies*. Oxford: Pergamon Press, 1986, 102.
6. Tunstall, *op. cit.*, 193.

7. Tunstall, *op. cit.*, 203.
8. Pitt, D.C. *Government and industry relations: key issues in the US information industry.* London: Economic and Social Research Council, 1986, 26–27 and Feigenbaum, E. *and* McCorduck, P. *The fifth generation.* London: Pan, 1984, 290–291.
9. Toffler, A. *The adaptive corporation.* Aldershot: Gower, 1985.
10. Tunstall, *op. cit.*, 195.
11. Larson, J.K. *and* Rogers, E.M. *Silicon Valley fever: growth of high technology culture.* London: Allen & Unwin, 1985, 225.
12. Pitt, *op. cit.*, 44.
13. Tunstall, *op. cit.*, 276.
14. These are listed in the report by the Information Technology Advisory Panel: *Making a business of information.* London: HMSO, 1983, 41–42.
15. Levi, *op. cit.*; and see *New Scientist*, 28 August, 1986, 25.
16. Melody, W. First Eugene Garfield Annual Lecture. University of Strathclyde, 29 November, 1986 (to be published). Points raised during discussion.
17. Tunstall, *op. cit.*, 84.
18. *The Economist*, August 16, 1986, 46–47.
19. Irwin, M. *Telecommunications America: markets without frontiers.* London: Quorum Books, 1984, 119.
20. Cable and Wireless. Annual Report and Accounts, 1986, 1.
21. Cable and Wireless, Annual Report and Accounts, 1986, 13.
22. Hunter, P. Finding a role for Mercury. *Communication Management*, September 1986, 8.
23. Cronin, B. *and* Gudim, M. Excellence under the microscope. *Aslib Proceedings*, 39(1), 1987, 17–31.
24. US Congress. Office of Technology Assessment. *Computer based national information systems: technology and public policy issues.* Washington, DC: US Government Printing Office, 1983, 55; *and* Williams, M. Policy issues for electronic databases and database systems. *Information Society*, 2(3/4), 1984, 383–413.
25. Gurnsey, J. *The information professionals in the electronic age.* London: Bingley, 1986, 37.
26. *The Economist*, August 23, 1986, 10.

THE ESSENTIAL RESEARCH TOOL

INDEX TO THESES



The authoritative and comprehensive bibliography of all 10,000 theses accepted for higher degrees by the universities of Great Britain and Ireland, and the Council for National Academic Awards.

- **FULL COMPREHENSIVE ABSTRACTS** offering an incisive summary of the content
- **AN ENHANCED SUBJECT INDEX** guides you quickly to relevant theses
- **TEN TIMES MORE INFORMATION EVERY QUARTER** allowing you to research with precision and efficiency

Every thesis entry includes a subject classification, abstract number, thesis title, author, university, degree, year, document delivery ordering number and NOW INCLUDES A COMPREHENSIVE ABSTRACT.

NOW EXPANDED AND IMPROVED

INDEX TO THESES WITH ABSTRACTS

☐ Yes please, I would like to subscribe to **INDEX TO THESES WITH ABSTRACTS** for one year **£140** ☐ Payment enclosed ☐ Please invoice me
(Cheques made payable to Aslib)

☐ Yes please, I would like more information on **INDEX TO THESES WITH ABSTRACTS.**

Name ______________________ Department ______________________

Organisation ____

Address ____

____

Postcode ______________________ Country ______________________

Signature ____

Expert Information Ltd, Woodside, Hinksey Hill, Oxford OX1 5AU, England Tel Oxford (0865) 730275
Aslib, Information House, 26-27 Boswell Street, London WC1N 3JZ Tel 01 430 2671

Information for chemists – a European viewpoint

Monty Hyams

Vice President of Aslib

The chemical information marketplace is a truly international one, in which Europeans play a very important part, especially in the areas which I have selected for discussion. The last few years have seen a dramatic increase in the use of chemical information systems which employ topological coding – for example, CAS online, Telesystemes-DARC and the Molecular Design suite of programs.

These systems encode chemical structures by determining the shape of the molecule and the interconnections between the atoms. They allow you to input search statements, and receive answers, in the form of the chemical structure diagram – which is, of course, the unambiguous language normally used by chemists. However, this approach will not presently solve the problem of encoding so called Markush formulae (the generic formulae found in chemical patents).

Topological coding systems such as DARC and CAS online are designed to encode single compounds into the database. You can do sub-structure searches using generic search statements, but the database you are searching comprises only single compounds – in the case of CAS online you are searching the CAS Registry collection of over six million compounds. However, a single claim in a single chemical patent can easily encompass six million compounds – indeed, there are many Markush formulae which can cover an infinite number of compounds.

Take the case of substituent R in Figure 1, which among other things can be optionally substd. aralkyl. No limit is given to the length of the alkyl chain, or to what substitution and how many substituents may be present. A system such as CAS online would in theory have to take every possible compound within this Markush and encode it – an impossible task.

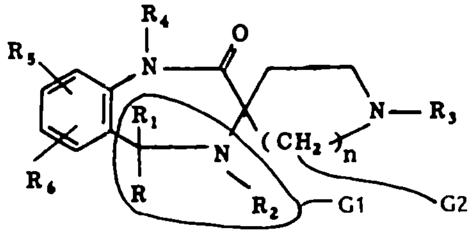
CAS get around this problem by encoding only those compounds which have been specifically disclosed and described in the body of the patent specification and more recently in the specific claims.

Such short cuts are of no use to the patent community having to carry out novelty or infringement searches – they deal with the widest possible disclosure.

For the past 25 years the Markush structures in the patent literature have only been coded in a satisfactory manner by two organisations – the IDC in Frankfurt using the Gremas code, and Derwent in London

Aslib Proceedings, 39 (5), May 1987, p.169–181. Printed in Great Britain

Figure 1



(I)

R = H, alkyl (opt. unsatd. and/or cyclic), opt. ring-substd. aralkyl, opt. substd. aryl or heteroaryl;
R_1 = H;
R_2,R_3 and R_4 = H, alkyl or aralkyl (opt. ring-substd.);
or R_1 and R_2 are together a bond;
R_5 and R_6 = H, halo, NO_2, CN, CF_3, lower alkyl or lower alkoxy;
n = 1-3.

also using a fragmentation code. No other satisfactory files exist in the international market-place.

In both cases, the coding has erred on the safe side in that provision is made for all possibilities, but through over-coding and the inability to define adequately points of attachment, the number of false-drops is often very excessive, making the screening of the results a tedious process. Also, the codes are quite complex, requiring a great deal of expertise on the part of the searcher. Derwent have made improvements recently to make their lead in the market-place even more secure.

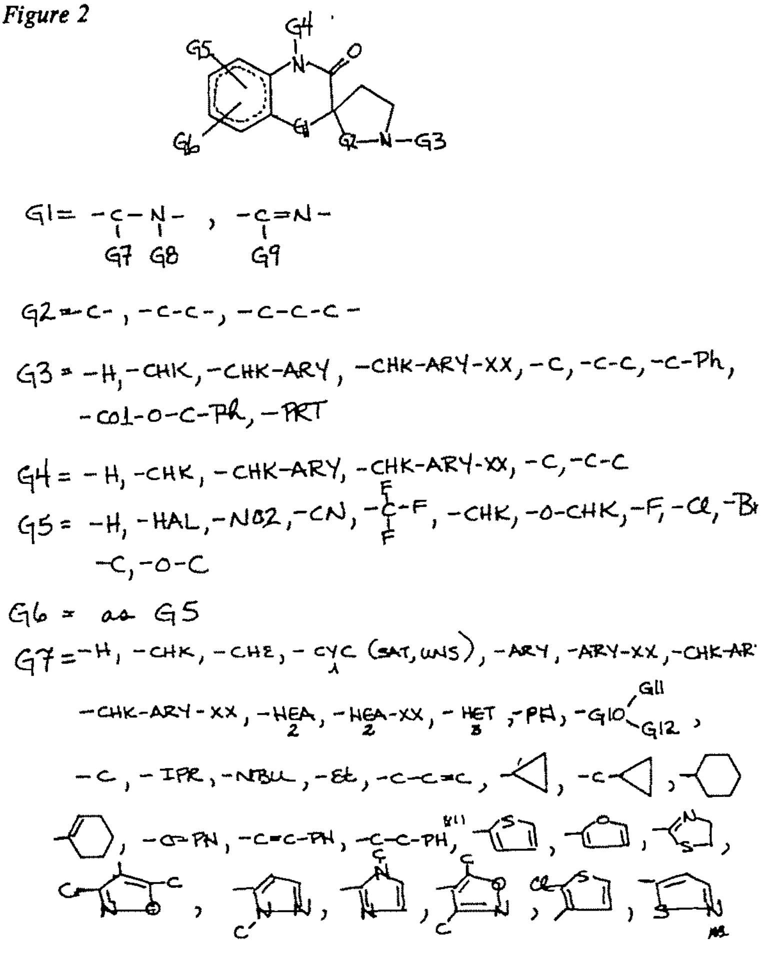
Working with Telesystemes in Paris, Derwent has now perfected an extension of the DARC retrieval system that can also be applied to Markush formulae, and files are presently being loaded for beta-testing. It takes on average about one hour to analyse each patent containing a Markush structure and there are about 400 of them each week from all over the world.

Figure 2 shows you the first of two pages of the analysis sheet for the structure in Figure 1, to give you some idea of the work involved. One of the variables of R has been called G7, and you can see how many possibilities exist for this. Incidentally, terms such as CHK (alkyl) are known as super-atoms, a very important concept of the DARC-MARKUSH system. With the aid of a light pen and an ordinary IBM-XT micro-computer, the data is transferred to the Telesystemes mainframe computer at Valbonne in the South of France.

Any one patent will generate a basic structure screen – in this case the one shown in Figure 3, giving the points of attachment of the different groups.

It will also generate a number of subsidiary screens for each of the

Figure 2


G4
O
N
G5
G6
G1
G2—N—G3
G1= -C-N- , -C=N-
G7 G8 G9
G2=-C- , -C-C-, -C-C-C -
G3 = -H, -CHK, -CHK-ARY, -CHK-ARY-XX, -C, -C-C, -C-Ph,
-CO1-O-C-PR, -PRT
G4 = -H, -CHK, -CHK-ARY, -CHK-ARY-XX, -C, -C-C
G5 = -H, -HAL, -NO2, -CN, -C(F)(F)-F, -CHK, -O-CHK, -F, -Cl, -Br
-C, -O-C
G6 = as G5
G7 = -H, -CHK, -CHE, -CYC (SAT, UNS), -ARY, -ARY-XX, -CHK-AR
-CHK-ARY-XX, -HEA, -HEA-XX, -HET, -PH, -G10(G11)G12,
-C, -IPR, -NBU, -Et, -C-C=C,
-C=PH, -C=C-PH, -C-C-PH
G11
S
O
N
S
C
C
N
O
N
N
C
N
N
C
C
O
N
Cl
S
S
N
NB

variables, the one shown in Figure 4 being for the R7 variable of the substituent R of the original Markush.

To carry out a search, it is merely necessary to enter on a microcomputer screen the graphical representation of the generic structure you are looking for. Because of the multi-level coding of the file, a patent can be searched as widely as need be for novelty, or more narrowly, as for infringement.

IDC, a consortium of mainly German chemical companies, which uses the Gremas code, and is the only other organisation coding Markush structures, has decided to continue with the Gremas code, but to enable its coders and searchers to generate these complex codes more easily using graphics input. They are planning to use the Gensal system developed by

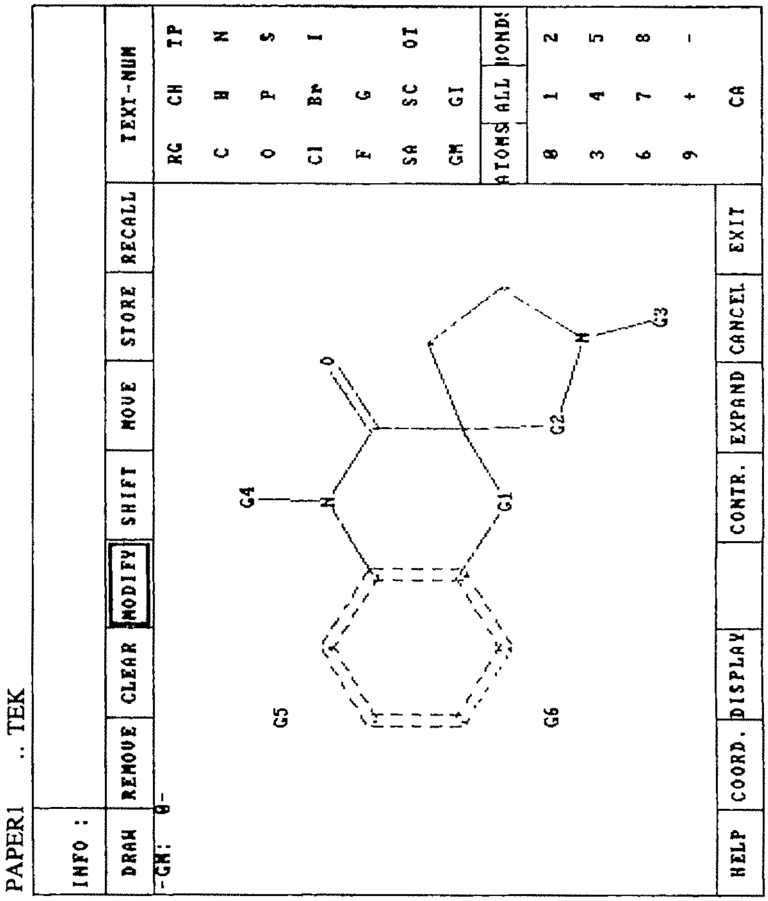


Figure 3

Professor Lynch in Sheffield, England, to develop these codes via connectivity tables.

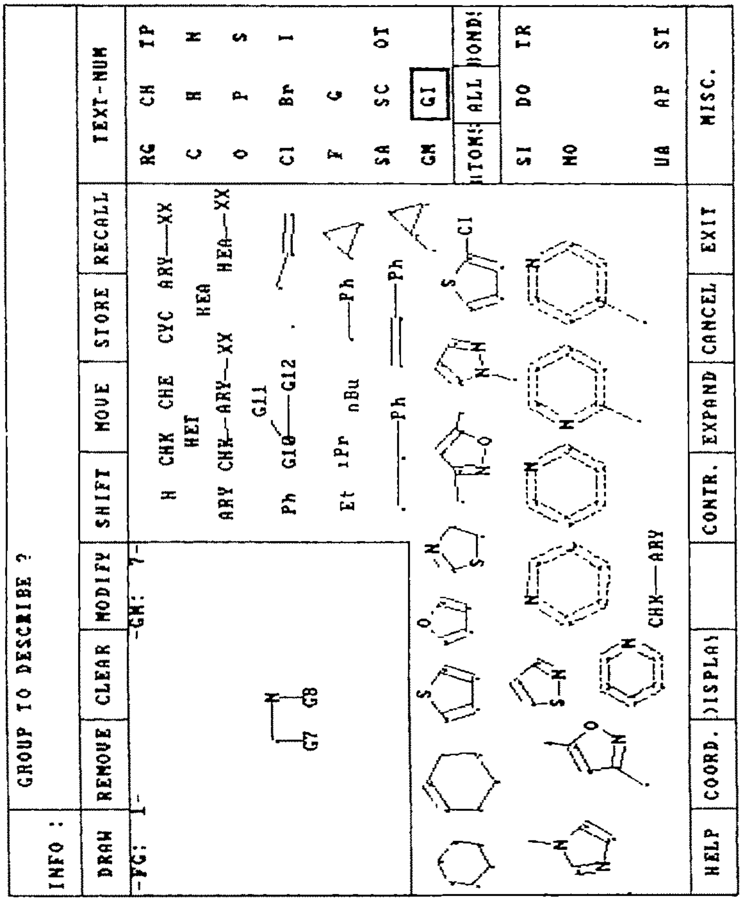
Why is such a complicated search system necessary? It is because chemical patents tend to have complex claims which defy interpretation even by a competent information scientist, and are, therefore, a legal obstacle.

The problem is that unlike US patents, which are only published after thorough examination, those of Japan and Europe, for example, are published in an unedited form. Even worse, it is necessary to wait several years for the granted patent to issue before knowing what is eventually claimed, in order to decide whether infringement is risked. A further difficulty is that the text of a European patent specification may not be in English and over 35 per cent of all basic chemical patents are in Japanese.

Derwent, in London, and the IDC, in Frankfurt, are the only organisations worldwide that can help in this important aspect of the international chemical information market-place.

Figure 4

PAPERG7 .. TEK



Statistical analysis

Information departments usually supply to management summaries of journal articles, reports and patent documents considered to be relevant to their needs. What management really needs is evaluated analyses giving trends in research, in technology, in competitive activity and in product strategy. This is very important in the highly competitive and research-oriented chemical industry. Using statistical analysis in conjunction with sub-structure searching, for example, it should be possible to identify which types of compound are being actively researched by whom and where, and to establish new emerging structure-activity relationships.

Many organisations issue periodical reports giving the results of specific analyses and forecasts, such as the now defunct OTAF *Reports of the US Patent and Trademark Office*. Derwent have found that subscribers want to carry out their own in-house analyses and there was an overwhelming demand to be able to do this on the Derwent Patents Files online.

However, Derwent have found that the installation of a fully operational statistical capability within the environment of an online database service is at present impractical for a combination of economic and technical reasons. Most mainframe statistical packages, e.g. SAS, work very quickly by means of seizing up as much of CPU core memory as is required for a given analysis.

This is the antithesis of what is required on a workable online system. If many users were performing analyses at one time, all other users would be held up until the statistical operations were complete.

Moreover, whereas online operation computer costs can be normalised over time, allowing a fixed rate connect hour charge, costs for statistical analyses are very dependent upon the particular analysis being performed.

The solution to this problem is to limit the size of analyses allowed. Pergamon-InfoLine's GET command is an example of this, but the limit of 200 lines for analysis makes it somewhat unsatisfactory.

Telesystemes-Questel has implemented a limited facility, MEMSORT, in their new Questel-Plus software, but performance rapidly degrades with increased numbers of data items. Even with optimum performance at only 500 X 1,000 data items, Telesystemes has reported healthy use of this capability, underlining the value of providing systems of this nature to the user community.

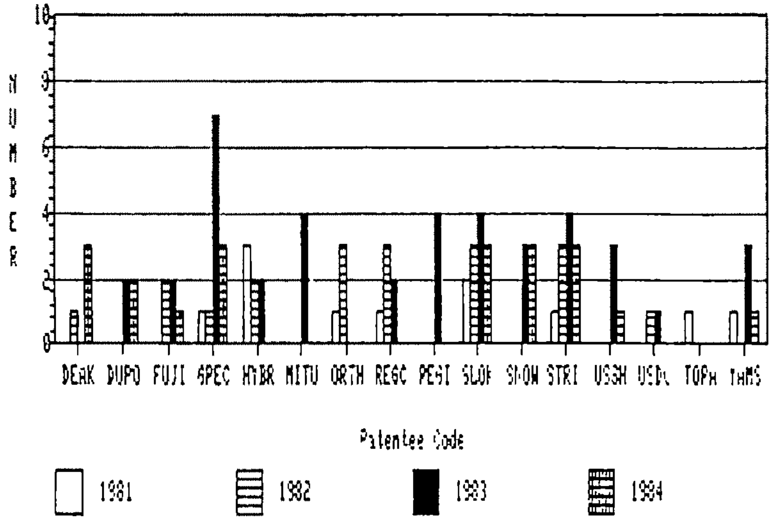
Derwent has opted for a completely novel approach – downloading data from an online host and performing the analysis offline on a microcomputer. The program, PATSTAT, was originally based on dBASE II. It has now been rewritten using PASCAL and runs at 20 times the original speed. At 1,200 baud it is possible to download in one hour 1,000 Derwent patent records containing all 10 parameters to be analysed, or 10,000 records if only one parameter – e.g. patentee – is to be analysed. Even in broad-based investigations, covering wide areas of technology where larger volumes of data are required, microcomputers are capable of running analyses within the standard 20MBytes of storage.

Figure 5 shows by way of example a PATSTAT analysis in histogram form of patent data on monoclonal antibodies, showing for the most active companies the research activity over time as depicted by the priority year of the invention.

The behaviour of the companies in terms of patenting activity was supported by the business data available, through searching the PROMT and CIN databases. For example, the Green Cross (GREC) jump in research activity in 1983 ties in with their co-operative R & D arrangement with the University of California made in 1982.

Toray (TORA) lack of activity in 1981 is related to a licensing arrangement with Fuji, who's activity in this area begins with priority year 1982. Du Pont only entered the field in 1983, just one year after announcing greatly increased expenditure on R & D. Hybritech's (HYBR) decreased patent activity can be explained by their announcement of a number of new products in 1984–5, suggesting a move away from research into perfection and production.

Figure 5



One possible drawback of the microcomputer approach is that having sold the program, the only revenue to the database producer results from downloading. Since PATSTAT, which sells for a mere $550, can also be used to analyse other databases, Derwent will not even get downloading revenues in such cases as things stand.

Finally, one of the most important uses of statistical analysis from the information scientist's point of view, is to be able to select only those relevant documents in a search containing a given term at least a specified number of times or to carry out a monthly analysis of all new abstracts in a given field and rank the most frequently occurring terms as a ready means of detecting changes in interest.

Most importantly, the ability to be able to perform statistical analyses opens up for chemical information a whole new market-place – the sales and planning departments on high budgets, instead of the under-financed research and development fraternity.

Reaction mechanisms

These are a very important, but somewhat neglected, aspect of chemical information. Until recently, graphics searching was unavailable. In the last few years, however, there has been a flurry of activity. Now at least four commercially available software packages designed specifically for in-house storage and retrieval of chemical reactions based on graphics input and output, are available:

REACCS	of Molecular Design, California
SYNLIB	originally of SmithKline & Beckmann, US – now in private hands
ORAC	of Leeds University, England
DARC-RMS	of Telesystemes, France

REACCS was first on the scene and has a clear advantage over its competitors as its database is the largest and most comprehensive. Furthermore, REACCS may be used on a variety of minicomputers, whereas ORAC is currently limited to VAX, and DARC-RMS to IBM computers.

REACCS' software does, however, lack some of the attractive features of ORAC and DARC-RMS, notably an atom-by-atom mapping of the reaction centres. For this reason REACCS is currently weak in handling certain types of reaction, but this should be remedied shortly.

It has been said that ORAC has the best software, already creating much interest in Europe, but so far not penetrating the American and Japanese markets. Its main limitations are the size of its database – only 15,000 records – and the belief that it is being produced and managed by a small group of academics with little marketing experience.

SYNLIB has enjoyed some success in both the US and Europe, but its software appears to be less sophisticated than those of its competitors. It has also been weakened by management problems and is no longer supported by SmithKline. Its database of some 30,000 records is criticised for its emphasis on alicyclic chemistry.

DARC-RMS has many of the features of ORAC, including an excellent substructure search capability. However, having no database, it has made very little market penetration, even in France. Software retrieval systems need databases to search. The only really significant reaction databases currently available or in prospect are those of ISI, CAS and Derwent.

ISI's *Current Chemical Reactions* was started in 1979 and has 28,000 entries to date. It only covers 100 journals and excludes the patent literature. It is shortly to be issued in tape form but only for searching in-house exclusively using REACCS.

The CAS service, to be started in 1988–9 with no backlog, will also only cover 100 journals, yet is expected to include 300,000 reactions annually, including all intermediate reactions of a single synthesis irrespective of novelty. This is a peculiar decision and an example of information overload. One gets the feeling that the mighty Chemical Abstracts, realising that it has been inactive in this field, has hurriedly announced forward plans without having done the necessary market research.

In England Derwent has now commissioned FraserWilliams to create from its database a graphics file using connectivity tables, in such a way that it may be simply converted by the user to work on any of the in-house search software systems mentioned for graphics retrieval.

A fundamental problem with these reaction services, however, is that they are merely bibliographic. Chemists frequently need to know how best to make substance X, in other words, they need a recipe.

In this regard, Pergamon's new service – provisionally called CHEMQUEST, but being objected to namewise by Questel – is of interest. It was launched at the recent ACS meeting in Anaheim, and will be a development of the Fine Chemicals Directory database recently purchased from Fraser Williams, England.

According to Pergamon this service will allow online graphics input of a desired molecule, or part of a molecule. The system will then respond with a recommended route, plus guidance on where the suggested starting materials can be obtained. It will take into account both the efficiency and speed of reaction, as well as the costs of the starting materials.

The other major area where chemists need simple answers – factual databanks on properties, spectroscopic information and so on – shows a similar pattern to reactions databases. There *are* online databanks around, but they are not widely used – the only commercially acceptable solution by the vendors appears to be in-house databanks with special software, so there would appear to be a market niche ready to be exploited online.

European viewpoint of online politics and policies

When online searching was in its infancy, Dr. Anderla of the European Commission was sufficiently far-sighted to realise that a co-operative effort was needed on the part of Europeans to stand up against American domination of the market.

The concept of EURONET was implemented. It had two main objectives. 1). There was to be no duplication of database mounting within the network 2). Telecommunications costs within the network should be low and uniform by special agreement amongst the different countries, and these facilities were not to be shared by transatlantic linkages.

The EURONET plan was unsuccessful for at least five reasons. 1) Hosts could not agree on who should have the most profitable databases. 2) No suitable software was at hand, and insufficient funds were available for development. 3) The language barrier made training and promotional effort difficult between countries, for example, to have COMPENDEX mounted in Germany only and supported over the whole of Europe. 4) There was not enough critical mass of databases available for cross-file searching, or to justify learning a new command language. 5) EURONET communications lacked sufficient power and reliability, and the various national PTTs were most unco-operative in making concessions.

EURONET is no longer in existence, and the various factors contributing to its downfall are still with us, so that the European online market is hopelessly fragmented and still dominated by the Americans.

For Europeans, the major hosts in the online business for chemical information are STN, Lockheed, ESA and Telesystemes – followed by DataStar, FIZ and SDC – with Pergamon-InfoLine, a dark horse newcomer, now saddled with SDC. Apart from Derwent, the only significant home-based chemical databases are an interesting suite of small specialist ones of the Royal Society of Chemistry – of which *Analytical Abstracts* and *Chemical Business Newsbase* are the most heavily used.

It is difficult to be precise, but the European usage of online chemical information is only about 25 per cent of that in the US.

An important factor inhibiting the use of all online systems in Europe is the high cost and unreliability of telecommunications. A recent EUSIDIC survey showed that 30 per cent of all attempted online connections starting in Europe failed because of failures by the telecommunications system. Language problem is another factor. In the future all scientific articles may be converted by an automatic translation program into a standardised language – probably American English – before being placed online for international access.

Online policy

It has always been Derwent policy to charge a basic subscription fee for its various documentation services. This fee merely gives the subscriber the right to select materials such as booklets, microfilm and magnetic tapes from the service in any desired combination and amount. Because the basic subscription has been paid, all selected materials are supplied at cost price.

This arrangement is particularly attractive to large subscribers requiring multiple copies, and is also attractive to Derwent, since it guarantees a minimum commitment on the part of the subscriber. It is mainly for this reason that Derwent is not particularly worried about the impact of online on sales of its conventional material products, and even welcomes online as making its services more valuable to subscribers with less effort and capital commitment on their part. In any case, since Derwent policy was to pay all the online host's set-up costs and so control access conditions and price, the basic subscription concept was adequately protected.

Other database producers have approached the problem in another way, by raising online prices, but this is still insufficient. Chemical Abstracts, for example, would have to charge several hundred dollars per hour on outside hosts to compensate for total loss of print sales. Moreover, it is irrational to charge too heavily based on number of hits obtained, since the most valuable novelty searches are those giving no hits whatsoever.

There are three rational solutions to the problem for the database producer. 1) Charge an upfront subscription, like Derwent. 2) Restrict online access to print subscribers, or make non-subscribers pay very heavily, like ISI, for example. 3) Become your own online host, like Chemical Abstracts.

If Chemical Abstracts had decided on this policy at the very outset there would have been less room for criticism. As it is, having let the various hosts invest valuable time and money in getting the CAS files operative and popularised online, they have now started in competition with them unfairly with the intention of turning back the clock and becoming the sole source. In other words, the files they are now supplying to other hosts are less complete in not containing the full text of the abstracts, and less timely.

In normal circumstances a publisher has every right to protect his position by monopolising the sale and distribution of his product. Ordinary market forces will protect the consumer from unfair exploitation. However, with such a unique database as Chemical Abstracts, protective market forces are non-existent, and the worldwide chemical community is at risk.

Either the American Chemical Society should be persuaded to give adequate guarantees and protection to subscribers on pricing policy, and to other database spinners on freedom from unfair competition, or its actions might well be challenged in the courts by the hosts. Also, an internationally funded competitive body might well be considered based on European and Japanese chemical societies to protect their position.

Political constraints abound in the area of patent information, so vital to the chemist. For example, the United States Patent Office – along with other national offices – supplies magnetic tapes to INPADOC in Austria to create a patent family tape. But this can only be fully accessed at very high cost from the INPADOC computer in Vienna, or from Pergamon-InfoLine in London.

The tapes of the European Patent Office can only be accessed publicly online anywhere in the world from a computer in Europe, and even then only through the intervention of INPADOC. English language abstracts prepared by the Japanese Patent Office can only be accessed through SDC. Such restrictive practices not only present a commercial threat, they inhibit the technical advantage of being able to access several related files at the same time and perform cross-file searching.

CD-ROMs

CD-ROMs are the latest superstars in the chemical information marketplace. People are talking about them in Europe and the US.

Although consultancies and exhibitions centered around CD-ROMS abound and are thriving in Europe, there are very few CD-ROM ventures in the commercial marketplace, and none that are anywhere near to breaking even.

Four organisations are particularly active in Europe promoting the concept – Silver Platter, BRS, Archetype and Harwell Laboratory. A number of experimental systems are being developed assisted by partial funding from the Commission of the European Communities, one of them being the placing on CD-ROM of Derwent's *Biotechnology Abstracts* database.

However, it would seem that at the moment CD-ROM is a technological solution looking for a problem to solve. That problem is less likely to relate to conventional online, but rather to the publication in key-term searchable form of major reference works not required to be updated too frequently. For chemists these would include *Dictionary of Organic Compounds, The*

Rubber Handbook, Beilstein, Perry's Chemical Engineers Handbook and the like.

The other obvious area of application for CD-ROMs is in document delivery. In Europe the so-called ADONIS project (a combination of Blackwell, Elsevier and Springer) has risen again from the ashes (and this time without Pergamon) to see if CD-ROMs will do the trick. They have decided to concentrate on the most heavily requested journals – the biomedical ones – and a two-year experiment is being carried out in conjunction with a number of co-operating delivery centres such as the British Library, and the award by the European Patent Office of bureaux contracts for scanning 60 million pages of documents.

The equipment needed by the document delivery centre is a microcomputer, disk player and laser printer costing around $12,000 per workstation. This cost is not beyond the reach of the average Corporate Information Department, at least within the chemical industry.

Benefits of CD-ROMs to information scientists

One of the biggest disadvantages of present online retrieval systems is the mass of paper output generated, the need for offline prints and the difficulty of screening the results for relevance. In fact, mainly because of this, searches are frequently made narrower than they should be, and titles only are printed out whereas whole abstracts could have been made available. Also online print-outs cannot depict graphics or chemical formulae, so that the results can be meaningless.

Pergamon tried to tackle this problem using optical disks applied to online searches of US patents by displaying the front pages of 'hits' on a separate screen, but the project failed hopelessly for a number of predictable reasons.

Derwent now has a system whereby an intelligent terminal can collect accession numbers from an online search, and directly retrieve relevant abstract images from microfilm having exactly 10,000 records per 200ft reel. However, other than for SDI purposes, the arrangement does have the disadvantage of having to mount several reels.

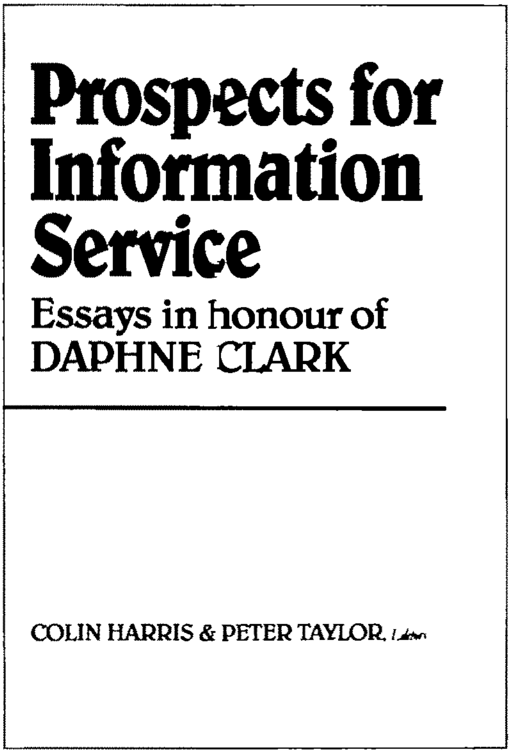
Earlier, graphics systems for the input and retrieval of chemical structures were described. Even here the problem of displaying answers graphically was far from satisfactory, especially for the Markush structures in patents due to overcrowding of the screen.

Whereas the use of CD-ROMs as a substitute for the powerful search capabilities of commercial online systems especially using very large databases is not foreseen and particularly where cross-file searching is required, the immediate advantage would be using the 600Mb of CD-ROM to store abstracts including graphics and chemical formulae for display purposes only to large, heavily used databases. Serial update need only take place annually, with the most recent information being held for the time being on microfilm or laser card.

Such a facility applied to Derwent's *Chemical Patents Index*, for example, would revive one of the greatest benefits lost to the service with the phasing out of punched cards. Originally, searches were carried out using punched cards with abstracts printed on them, so that the results of a search were immediately scannable in all their glory – drawings, formulae and clear print. The use of CD-ROMs for display should remove the biggest present-day drudgery in searching, namely the need to hunt out the relevant abstracts prior to ordering full text copies via – if all goes well – systems such as ADONIS.

From the fore-going it can be seen that there are several important areas of the international marketplace for chemical information dominated by the Europeans in general, and by Derwent in particular. Derwent in fact derives one-third of its 30 million dollar annual income from the US, and one-third from Japan. Its income is half that of the mighty Chemical Abstracts, and its online usage of 60,000 hours per year makes its files one of the most heavily used. Add to this the unique position of the INSPEC database of electronics and physics, and Europe isn't doing too badly in the scientific information market-place.

The sting in the tail is that Derwent is now owned by a Canadian company with its headquarters in New York.



Prospects for Information Service

Essays in honour of
DAPHNE CLARK

COLIN HARRIS & PETER TAYLOR, Editors

Now available from Aslib

The Association for Information Management

£15

Proceeds from the sale of this volume will be donated to the British Heart Foundation.

26 [illegible]

Who cares if you've got problems finding staff or a job?

Aslib Professional Recruitment does - and we're only a phone call away.

If you need to recruit or replace staff or if you're seeking your ideal job within an information unit – we know what you're up against Time Time spent waiting for responses to advertisements and applications Time spent sending or receiving courteous rejections More time than you can afford

Aslib Professional Recruitment understands We know you need your problem solved quickly and efficiently, and we can meet that need – now All you have to do is call us

A tailor-made shortlist in 24 hours.

Whatever your requirements for permanent or temporary staff, Aslib's recruitment service can put a realistic shortlist of candidates on your desk by this time tomorrow We have a "live" file of information personnel representing all levels of qualifications and experience, who are seeking career opportunities From this file we will select those applicants most suited to your needs

Free, confidential service to applicants.

Whatever your qualifications or experience in information handling, we can help you to find the right job in the shortest possible time Your application will be treated with the utmost confidence and our service comes to you completely free

Round-the-clock answering service.

Whether you're recruiting staff or contemplating your own career move, Aslib Professional Recruitment Ltd cares about bringing you and your potential employee or employer together to your mutual advantage

Our 24 hour answering service will take your call out of office hours on 01-404 0334 If you prefer to phone during the day ring Alice Gittoes on 01-430 2671, or write to her at Aslib Professional Recruitment

Aslib

Professionals in Information Recruitment

Aslib, Information House, 26–27 Boswell Street, London WC1N 3JZ
Telephone 01-430 2671

Aslib PROCEEDINGS

Volume 39 Number 6 June 1987

CONFEDERATION OF INFORMATION COMMUNICATION INDUSTRIES (CICI)

Proceedings of General Assembly London 11 December 1986

Introduction: Chairman's address 181
Charles N Read CBE

Innovative research in support of more informed decision making 187
Professor William H Melody

Information policy progress: a UK-EEC update 193
David Worlock

The paperless office 197
Gordon Calvert

CENTRAL LIBRARY

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **JUNE 1987** **Number 6**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors **ISSN 0001 253X**

Introduction: Chairman's address

Charles N Read CBE

Chairman of the Confederation of Information Communication Industries (CICI)

The view is increasingly accepted that information is now *the* key economic and strategic resource in developed societies, from manufacturing to marketing, from finance to defence, from government to the leisure industries – indeed in many activities of society.

The importance of the Confederation of Information and Communication Industries (CICI), which brings together the many sectors of the information business industry is very clear. It is a pleasure for me and my colleagues on the Board to be able to deliver to you an annual report which documents and explains CICI achievements during its brief existence.

I hope you are able to get a sense of perspective on CICI from these papers. It is, as you would expect, progressing through a number of phases:

- getting established and known
- identifying important issues of the day
- working on those issues to develop policy views
- submitting views to relevant bodies
- organising the monitoring of events in order to develop views and submissions

Now it is moving on to a more systematic and considered review of each of the major sectors of the industry and developing the future strategy for the confederation.

In all the earlier phases the participation and support of the members of CICI has been extensive and most encouraging and is, of course, vitally necessary. I hope it is clear that in the phase now being entered it is even more vital and necessary. I attach great importance to the new means being devised by your Board – notably the policy discussion forums – to facilitate the full involvement of members.

There is no doubt that we are in a growth industry, both in scale and complexity. There is also no doubt that growth must be accompanied by new policies, new regulatory devices, laws, institutional roles and attitudes in society. A new infrastructure is needed to provide society with the means to acquire and use information. New markets are developing, which like all orderly markets, need proper regulation. New problems arise for which previous conventional approaches are unhelpful. This is particularly true regarding the economics of information where traditional economic theory is inappropriate because:

Aslib Proceedings, 39 (6), June 1987, p 181–185 Printed in Great Britain

- information is not a conventional commodity since it is not consumed through 'use'
- there are strong tendencies toward natural monopoly in both the creation and the supply of information, thus normal market mechanisms do not operate
- much information has the property of a 'public good'
- there is an important 'public service' dimension to the supply of information, whether it is supplied for entertainment, education, commercial or industrial purposes, or indeed any other purpose
- there are grave difficulties in establishing property rights in information.

It is important to appreciate that markets for information are generally only created by one of two devices:

(a) by erecting barriers to access which you must pay to pass e.g. to a theatre, sports stadium, etc. You pay for permission to use the equipment needed to access the information, e.g. TV licence. You pay to know the procedure to access, e.g. database passwords and encryption keys

(b) by embodying information in durable objects e.g. books, records, videocassettes and optical discs.

The economics of infrastructure are unusual. There is massive front-end investment in construction; there are lengthy pay-back periods because significant revenue does not flow until a large part of the construction is completed. This presents a disagreeable financial profile to normal investors. Once constructed, the use of infrastructure is at near zero marginal cost. Natural market forces do not operate in such conditions. If our society is to be provided with new technological infrastructure we need to confront the financial realities of its provision.

Past policies for the use of information technology, which were devised and implemented piecemeal, can now be seen – indeed, with the way technology has advanced *must* be seen – as part of an integral whole, e.g. the policies for terrestrial broadcasting, DBS, cable, telecoms, cannot be treated in isolation. Tariff policies for information itself and for the technical facilities to supply and acquire it are integral with the technical means employed.

The issues involved in all such matters are inevitably complex and ill understood. There are good reasons for this:

- they have not been well formulated
- they are very ill quantified and much of the data does not exist in usable forms
- data gathering and analysis lacks a conceptual framework.

There is, in my view, an appalling lack of technical policy research and a track record of decision making without adequate understanding. The ESRC research initiative *re* the information industry is, therefore, profoundly significant and the full collaboration of the industry with that large and lengthy programme of research is a high priority task – for self interest, as well as national success.

Another important broad theme is the ever-increasing need for close collaboration between government and industry; between suppliers and users of both information and technology and between participants and regulators. It is no good simply lobbying government and hoping they will get it right. These issues are much too important to be left to politicians and civil servants. We must accept some of the responsibility for evolving national policies and must think it out for ourselves in order to develop good policies.

I sometimes envy the French and Japanese the achievement of better levels of consensus forming on major national strategies as well as their adherence to plans lasting longer than the life span of a single government. It seems that the need for such strategies is even greater when some of the important issues of the future require not only a UK policy but, indeed, a European policy, and even, at times, a worldwide policy.

I note, and I hope the government notes, the lack of suitable forums in which this collaboration can take place. CICI is such a forum and this is a very significant part of its importance.

Some notes on Broadcasting and telecoms policy

Information technology (and the many uses to which it is put) has now developed to the point where it is no longer possible to formulate separately the policies for each different sector of this activity The latest demonstration of this is in the Peacock Report which floundered badly when drawn away from the more immediate questions of broadcast charging. There are major inconsistencies in present government policies which result from past piecemeal decisions.

It is becoming much more widely recognised that there is a need for a major rethink and clearly all those in the information industry who are closely involved and ought to play a part in that rethink. The CICI Board has, therefore, decided to hold a policy discussion forum to provide an opportunity for full and open discussion of these matters among those involved. We hope to identify the key issues and to get some measure of the level of agreement which might be possible on how each should be dealt with. This could provide valuable input to the thinking of both the UK government and the EEC.

To provide a foretaste of these planned discussions, here are some of the important policy matters which need to be considered:

1. Should there be a single set of rules and a single regulatory authority for the information providers and channel operators, no matter which transmission medium (e.g. terrestrial broadcast, DBS, cable, VCR) they employ? Is it different from publishing by printing?
2. Is our national transmission capability properly regarded as a unified resource? Is it a natural monopoly? Or at least a set of

natural monopolies operated by specialist companies but which should be regulated as a single resource by a single regulatory authority? Should it be regarded as national infrastructure which may be used by competitors?

3 Should infrastructure (common carrier) operators be allowed to integrate vertically, i.e. into information providing and/or channel operating? Or should the old multi-roled institutions such as the BBC and the new multi-roled institutions such as British Telecom be restructured to provide more competition?

4 Should the current distinction between telecoms and broadband cable be dropped so that a single broadband grid can be built as fast as possible? If that is agreed which route would be best.

   (a) the PTT/B Tel route of progressive upgrading of their old networks?
   (b) new cable companies allowed to construct and to compete with the old telecoms local networks by being allowed to offer all services including telephony?

5 If the answer is (b), should British Telecom divest itself progressively of all local networks and concentrate on its role of national common carrier, following the AT&T example in the USA?

6 Should we rethink the use of the different parts of the transmission infrastructure e.g. use the scarce terrestrial broadcast spectrum for mobile communications and use cable for all fixed location transmission?

7 What arrangements should be made to preserve the valuable elements of public service broadcasting so well developed by the BBC?

8 Is Peacock right that given a solution to (point six) above, the market should prevail and, therefore, the technology best facilitating that policy (i e. a two-way transmission technology) should be used for broadcasting?

9 Would the development of new information services be stimulated by a better infrastructure, to the advantage of the UK?

10 How are infrastructure tariffs best set given that all infrastructure has high front-end investment for large module construction and near zero marginal cost for transmissions?

11 What is the regional dimension to these infrastructure and tariff policies?

12 Is our current funding strategy correct:
  (a) for infrastructure construction bearing in mind its very disagreeable financial investment profile?
  (b) for research and development?

13 On which issues is there a role for the EEC? Their recent proposed directive on broadcasting looks to me like unjustified meddling and seems to have been drafted by courtiers of King Canute who do not know they are in for a soaking.

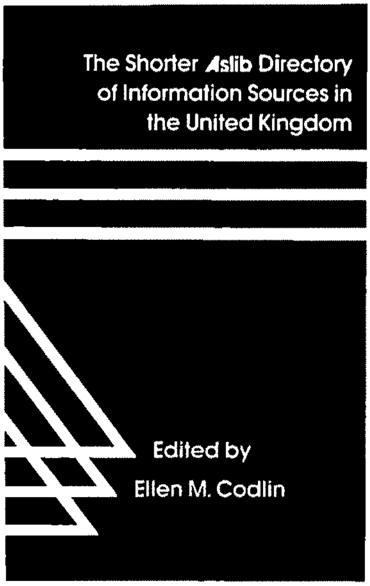
14 It is commonly claimed that the UK is ahead of most countries in 'deregulating' and moving towards an 'information society'. Is that wise? Is it true? Opening up markets to more participants requires more regulation not less.

15 Is the government well enough informed to further develop relevant national policies? Are the suppliers and users of information and of infrastructure well enough informed to recommend enlightened policies and not merely to seek to preserve existing parishes?

Contributions to CICI discussions of these important matters will be greatly welcomed, particularly from the main parties involved.

THE FAST AND EASY WAY TO TRACK DOWN INFORMATION

Concise, comprehensive and authoritative, The Shorter Aslib Directory is the ideal single source reference tool for librarians, journalists, students, writers and researchers of every kind, and anyone whose catholic tastes incline them to journeys of discovery through its pages.



The Shorter Aslib Directory of Information Sources in the United Kingdom

Edited by Ellen M. Codlin

*Full entries with lists of subsidiary bodies and branches, where appropriate.

*A comprehensive and cross-referenced subject index.

*Cross-referencing in the main body of the text.

*An index of abbreviations.

*The title of the person in each case to whom application for information should be made.

*The inclusion of both telephone and telex numbers for each entry.

The Shorter Aslib Directory, edited by Ellen M. Codlin, is available from Aslib and costs £60 (£65 to overseas customers)*. Send payment to Aslib Publications (Sales), 26–27 Boswell Street, London WC1N 3JZ.

*£10 discount to members of Aslib.

254 × 160mm; 1986; viii, 590pp
ISBN 0-85142-199-7, hbk.

Aslib

Innovative research in support of more informed decision making

Professor William H Melody

Director, Programme on Information and Communication Technologies (PICT), Economic and Social Research Council, UK

Introduction

Information and communication technologies are becoming more important to efficiency and growth in an increasing number of industrial and public service activities. Massive science and engineering research and development programmes – such as the Alvey Programme in the UK – have been established in many countries and by the EEC, with the objective of pioneering new technological advances in the field. The UK has frequently made impressive scientific and technological contributions to this. Yet the UK has not reaped the full benefits of this inventiveness.

Several years ago *The Economist* (2 April 1983) science and technology section headline read: 'Invented in Europe, patented in America and made in Japan?' This captures the primary UK problem i.e. implementing technology effectively to contribute to economic growth, employment and the creation of wealth.

The major success story over the past 25 years in the global economy, Japan, is not ranked high in scientific and technical inventiveness. Japan has made more effective use of many UK inventions than Britain. Japan's 'new inventions' have primarily related to such things as: innovative applications of the technical inventions of others (e.g. the transistor and micro-electronics); new approaches to the structure of organisations and decision making; new approaches to the structure of its domestic industries that are major users of the new technologies; new approaches to labour/management and industry/banking relations; a co-ordinated and well thought out government policy of support for Japanese industrial opportunity in national and international markets and other non-technical improvements such as the just-in-time inventory system, in the process of applying inventions for economic prosperity. The areas of Japanese success are precisely the areas that the UK has not seriously addressed through informed, in depth analysis or through significant support for underlying economic, social, managerial and policy research.

British industry includes world leading providers of information products and services. But UK success in the information and communication technology industries, as well as in many other industries that are becoming increasingly dependent on the efficient and creative use of information and communication services, is not likely to approach its potential until some significant attention

Aslib Proceedings, 39 (6), June 1987, p 187 – 192 Printed in Great Britain

is paid to the economic, social and policy implications of these technologies. The technologies are only tools that can provide opportunities for the creation and communication of information. It is the substantive information and communication products and services that more directly affect actual economic and social performance.

The ESRC programme

The Economic and Social Research Council (ESRC) was established by Royal Charter for the promotion of research in the social sciences. Council allocates funds for research that will increase the general understanding of economic, social, managerial, political and cultural aspects of society. In August 1985 it initiat ed the Programme on Information and Communication Technologies (PICT) as a major effort to develop a research programme focusing primarily on the information and communication aspects of IT rather than the technology itself. The objective is to create a network of research centres that will examine the fundamental economic, social, managerial and policy issues raised by these technologies. The research orientation is to provide results that will inform public discussion and enrich the foundation upon which major government and industry policies are made.

The research centres

During the first year PICT rigorously examined research institutions throughout the country to select the best centres. PICT worked with the selected centres in the development of specific research programmes and the outline of a wide range of potential research projects that would address fundamental issues relating to information and communication technologies and services. Three centres were selected to participate in an integrated research programme:

— The Science Policy Research Unit (SPRU), at the University of Sussex, will build on past work in technology policy, innovation and industrial development and in technology, social innovation and the services economy. Christopher Freeman will head the programme, Ian Miles will play a major role

— The Centre for Urban and Regional Development Studies (CURDS), at the University of Newcastle-upon-Tyne, will build on past work in regional economic development; the geographical dimensions of technological diffusion; employment, skills and training and the distributional effects of the information economy. CURDS Director, John Goddard, will head the programme.

— The Centre for Communication and Information Studies (CCIS), at the Polytechnic of Central London, will build on past work in the communication (broadcast, cable, film, print) and cultural industries, library technology and services, and the legal/policy aspects of the information economy. CCIS Director, Nicholas Garnham, will head the programme.

The research theme and initial projects

The major underlying research theme for the programmes at the three centres is 'dimensions of the information economy'. The research agenda will include the characteristics of information markets and the industries directly involved, the implications of new information technologies, telecommunication networks and electronic information services upon the operations of specific industries and the delivery of public services, the effects of laws, policies and regulations on the operating effectiveness of information markets; the implications for employment, training and education; the changing relationship between public and private information and the implications of public policy options on matters affected by the information economy.

After discussion with the PICT centres, vetting by the ESRC PICT Steering Committee, and approval by Council, initial funding by the ESRC and the host institutions has been allocated to get four important projects under way. It is anticipated that additional funding by co-participants from industry and government will allow both for an expanded effort on the initial projects and for the introduction of additional projects of specific interest to co-participants. The initial projects are:

- Mapping and measurement of the information economy. It will develop the fundamental economic inter-relationships, statistical classification schemes and actual measurements of the multiple dimensions of the information economy. It will establish a better information base for charting a path through the changing economic and social structures associated with these technological changes.

- A comparison of policies and regulatory regimes in telecommunication, broadcasting and tradable information. Are the policies and regulations consistent with one another and achieving their objectives in light of the convergence of these information services and the growing internationalisation of markets? Can regulation provide 'carrots' as well as 'sticks' for the information industries?

- An analysis of the use of information and communication technologies, and trade in information services in organisations in the northern region of the UK. A study of the diffusion of information technologies and services with particular reference to geographical dispersion and its implications for employment, economic growth and public services.

- Information technology and the military sector: implications for industrial competitiveness. How does heavy spending in the military sector stimulate and/or retard economic growth and competitive opportunity in the industrial sector? Are there structural barriers to effective technology transfer?

A sample of potential additional projects

In addition to those projects to which ESRC funding commitment already has been made, a wide range of potential research projects have been discussed and preliminary project proposals developed. An illustrative sample list of titles, drawn from the extensive list of potential additional projects, includes the following:

- *Human capital, skills & training needs in the information economy*
- *The growth and development of VANS and MDNS in the UK and Europe*
- *Changes in the information public domain resulting from the introduction of information and communication technologies and related policies*
- *Use of electronic information services in UK public and private sectors*
- *The impact of new technologies on work and labour organisations*
- *Tradable information and public services*
- *The impact of new information and communication technologies on the organisational structure and output of tradable information companies*
- *The role of information technology and automation within the corporate restructuring process*
- *New information technologies and software development and support*
- *New technology, producer services and tradable information*
- *New information technology-based services, the household and changing consumption patterns*
- *Changing markets and structures of cultural information industries*
- *Direct broadcast satellites: a comparative analysis of the policies adopted by member states of the EEC*

The direction of expansion of the initial four projects and the selection of additional research projects will be made in co-operation with industry and government participants in the programme.

Funding

The host institutions for the research centres have agreed to provide core overhead facilities and administrative expenses, plus an allocation of faculty time for research, estimated at approximately £80k per annum per centre. The ESRC has provided initial funding of £75k per annum per centre as direct research funds. In addition, ESRC funding is expected to support PhD level research students working in association with the PICT centres.

The programme is seeking additional research funds of £150k per annum per centre from industry and government to round out the programme. Organisations already committed to participate include the Department of Trade and Industry (DTI), British Telecom and the British Library.

CICI/PICT relations

PICT and the Confederation of Information and Communication Industries (CICI) have been working co-operatively on many areas of common interest over the past year, and have developed a number of constructive working relationships. The CICI board of directors has given its full support to the development of PICT, and is encouraging its member industries and firms to participate in the PICT.

Conditions for participation by industry and government organisations:

- Have an interest in the current issues that affect the market, policy, economic, social and managerial environment in which the information and communication industries operate – in both the private and public sectors. PICT is not directed to short-run fire fighting.
- Provide a knowledgable person to participate in, or liaise with the programme on a limited part-time basis, including research project definition; periodic interaction with the research specialists throughout the programme; critical review of draft reports and dissemination of research results to your firm, industry, or government agency.
- Provide an initial co-funding commitment for three years, with termination rights on one year's notice after the second year. The initial commitment of the ESRC and the academic institution is eight years.
- The programme has been planned on the basis of contribution units of £25k per annum per contributor (or contributor group), from 1 April 1987. Large firms and agencies can buy in with multiple units, thereby influencing several different projects. Small organisations can share in contributing a single unit.

Participation is in the total programme. Participants should join because specific projects will address issues of direct concern. They will reap benefits from the entire programme.

Summary

The Programme on Information and Communication Technologies is unique. It is creating a network of centres directed to innovative research in support of more informed decision-making by industry and government, and the generation of long-term employment and growth in the information economy. It offers:

1. The UK's first concentrated and sustained assault on the complex economic, social, managerial and policy issues raised by the new information and communication technologies and the 'information economy'.
2. Experienced, academically-based research teams, with established credentials in the field and major databases already in place, in a co-ordinated programme.
3. Research that will gather and assess the data, and provide the interpretative knowledge that will establish a basis for more informed policy decisions by industry and government on a continuing basis.

4. A tripartite approach – ESRC, industry and government. Participation by co-funders at every stage of the research, from project definition to completion of research projects.
5. Rapid dissemination of research findings to participating institutions via interim reports, seminars and informal exchanges on a continuing basis.
6. A directed programme, managed, co-ordinated and co-funded by the ESRC, with substantial contributions toward overheads, administration and faculty research time by the academic host institutions.

Participants from industry and government will benefit by building on an established research infrastructure, experienced expert researchers, and dynamic programmes that have a running start on the issues under study. The programme will help them close the gap between UK potential and performance in the implementation of the information and communication technologies. More informed decisions will lead to better policies, increased efficiency, employment and growth.

Information gathering, processing, storage and transmission over efficient telecommunication networks is the foundation on which developed economies will close the twentieth century as 'information economies'. The ESRC Programme on Information and Communication Technologies will contribute toward the establishment of a sound foundation for the growth and development of an efficient and effective UK information economy.

For more information contact: Professor William H. Melody, Director, Programme on Information and Communication Technologies, Economic and Social Research Council, 160 Great Portland Street, London W1N 6BA Tel: (01) 637 1499.

Postscript

The Economic and Social Research Council approved the selection of three new research centres in its Programme on Information and Communication Technologies (PICT) at its meeting on 20 March 1987. They are: the Research Centre for Social Sciences, University of Edinburgh; the Department of Management Sciences, University of Manchester Institute of Science and Technology (UMIST) and the Centre for Research into Innovation and Culture of Technology, Brunel University.

The three centres will work with PICT Director, Professor William Melody, in the development of specific research projects. The detailed research plans will be reviewed by a special PICT Steering Committee of experts before going to Council for final approval. It is anticipated that the centres will begin in Autumn 1987 and run for eight years. Council has committed a minimum of £50,000 per annum per centre of direct research funding (£75,000 during the first two years) and will seek additional funding from industry and government toward an objective of £150 – 200,000 per annum.

Information policy progress: a UK – EEC update

David Worlock

Director, Electronic Publishing Services Ltd

The year 1986 was marked by more active indications of concern for information industry development policy (as distinct from information technology policy) in Whitehall and Luxembourg than almost any preceding year in the 1980s. UK initiatives launched during the year displayed to a fragmented market a real concern with the 'I' in IT, as the policy recommendations of the 1983 ITAP report began at length to be deployed in the marketplace. Meanwhile, the new DGXIII, straddled between Luxembourg and Brussels, sought to re-orientate its new workplan to new leadership, with initial indications of its eventual direction emerging in the Commissions' Electronic Publishing Conference and SOAG (Senior Officials Advisory Group), meetings both in November.

The Department of Trade and Industry (DTI), inheritors of ITAP's policy co-ordination recommendations, started the ball rolling in 1986 with their government-held tradable information policy initiative. While some 75 companies were contacted with the initial August release of information, and almost 50 showed interest in the acquisition of government-held data to create enhanced value services, attention had polarised by the end of the year on some 12 companies working on market feasibility studies. Which of these projects can be developed further and whether the DTI will be able to provide further project development assistance is not yet known.

It is clear, however, that two important new elements were present at the beginning of this policy initiative. One concerns the determination of government to see the policy widely known and implemented throughout other departments with valuable tradable information resources. Guidelines for government officers concerned with information resources and their potential tradability were drawn up, and circulated to the relevant staff in all departments together with an explanatory booklet and a set of outline contract guidelines prepared by Her Majesty's Stationery Office (HMSO). The policy was introduced by senior DTI staff to their opposite numbers, using a specially prepared video entitled *The Information Business* to illustrate the range of the information industry and its potential use for government tradable information as a commodity. Each department was encouraged to embark upon its own 'audit', creating a register of potentially tradable information resources which might be exploited by private sector vendors using the information comprised in them for quite different reasons than those for which government originally collected them.

Aslib Proceedings, 39 (6), June 1987, p 193–196 Printed in Great Britain

The second decisive factor was the emergence of CICI in the course of the year as a representative body with whom government could liaise on this type of policy development. CICI's role, through its Market Development Working Party, in providing an industry input into the creation of the guidelines and video presentations, represents a new departure in the UK for an organisation which is unique within the EEC for its umbrella coverage of a wide-ranging industry. In the event, anticipated difficulties (for example, contact guidelines) proved less arduous than had been imagined, as HMSO (both a CICI member and a government department) took up the DTI initiative and moved into a valuable co-operative position. With CICI represented on the inter-departmental 'contact group', which will examine policy implementation difficulties (trade procedures and response times will perhaps be early on its agenda), there seems a good chance that co-operative foundation stones have been laid for the future.

Government-held tradable information is, of course, a very modest beginning, and, if it is to be successful, it will need careful culturing in 1987. The regular release of more information derived from departmental information audits is vital: CICI plan to use their imminent networked service (operated via Telecom Gold) to provide CICI net updates to the original release. Issues still open from an industry viewpoint include buy-back potential and government procurement procedures. While acknowledging that the industry does not sell successfully to government, and has not specialised (as some hardware manufacturers have) in government information supply, CICI's Market Development Group continue to identify the government role as a major user, as well as supplier, of information as one of the keys to market development policy.

In order to get a better perspective upon the DTI's work in the information field, the VANGUARD project, designed to valuably enhance awareness of value-added data networks and managed data network services, must also be placed inside the frame of reference. The work on both policies is critically important, and reaches a decisive stage in 1987. Yet vital though they are, these policies are non-interventionist in character when compared to French and German policies and call for responses from industry segments often not strong enough to respond to opportunity. Faced with similar problems, as the CICI annual conference heard in 1986, the French government has reacted to industry weakness and lack of infrastructure by state re-organisation and by programmes like the Minitel initiative. While the number of viewdata receivers in France and the elapsed time usage attracts attention, it is worth noting that the Teletel services have now registered some 1,200 information providers. How many might survive a sharp frost in a fully commercial climate is questionable. What is undoubted is that the successor services that replace them will be working in an aware, if artificially 'matured', marketplace. CICI delegates were equally impressed with progress on the German market intervention plan, and if they were not always happy with state institutional controls, investment levels on major online services were bound to command respect.

This seemed a sharp contrast to the UK, where 1986 ended with warnings that government-held tradable information funding would be exhausted by the end of the financial year, that Support for Innovation funding allocations for the information industry was now exhausted for the year 1987-8, and intimations that any increases in EEC support for the industry would be offset by reductions in UK support. It also called into question the type of policy the EEC might create for a European information industry, where national plans are so widely divergent. The interim report of the EURIPA-EUSIDIC Barriers Group, published in December 1986, graphically illustrated the range and style of problem, concentrating upon telecommunications (interconnections and tariffs), upon standardisation (especially host interconnection and software interfaces) and, importantly, upon the relationships between government and the private sector.

The present DGXIII workplan is just over one year old. Some 25 million European currency units (ECU) were voted for it, and some 7½ million ECU had been spent by the end of 1986. Major priorities included patent information, biotechnology, materials data, electronic publishing, information for industry (specifically services for SMEs — small and medium sized enterprises), reducing regional discrepancies, and library resources. Industry reaction in the UK had not been critical of the intent so much as its timing, and had sought earlier attention to issues like copyright, and more work on market harmonisation moves. Some even wondered, given the disparity of PTT policy on data transmission in Europe, whether EURONET had gone too soon.

While this 'ground floor' policy is in place and fairly modestly funded industry speculation has concentrated on likely policy changes which might follow the appointment of Michel Carpentier, formerly head of the IT Task Force, to succeed Sir Raymond Appleyard as Director-General of a DGXIII which now includes the Task Force and is run jointly from Brussels and Luxembourg. Would this entail a more or less interventionist policy? Would the industry see ESPRIT-type groupings of major European information combines created for 'pre-competitive' research activity? Or would the concentration be placed upon market conditions and infrastructural issues at the expense of direct industry stimulation?

Up until April 1987 these issues remain unresolved. The Senior Officials Advisory Group (SOAG), a meeting of senior civil servants under the current workplan recommendations, counselled the creation of representative groupings of suppliers and users when it first met under Michel Carpentier's chairmanship in November 1986. Perhaps the best summary of the options open to DGXIII was given by Jacques Michel, the former head of Telesystemes-Questel, and now Vice-President of the European Patent Office, in his concluding address at DGXIII's Electronic Publishing Conference in November 1986. He said that the essential moves were:

- a new 'Club of Rome', creating a high level grouping of senior figures in the industry to examine the social, political and economic basis of the industry
- harmonisation of national policies and removal of barriers
- the creation of *de facto* working industry standards
- the development of jointly-created very large-scale programmes between European 'majors' in the information industry

- the initiation of research at the pre-competitive level
- the avoidance of direct subsidies
- the avoidance of government intervention on a capital venture basis.

Postscript

These issues were on the agenda when Michel Carpentier visited the UK in March and discussed them with CICI's Board in a specially-convened session. CICI has also been strongly represented in the ISPG (Information Services Providers Group) and ISUG (Information Services Users Group) meetings which were held in Brussels and Luxembourg between January and May in order to advise the Commission. As a result, and with reference to Jacque Michel's agenda, it does now seem likely that a new DGXIII workplan will address many of these issues, especially in terms of support for a shortlist of large scale projects in 1988, leading to a new information plan from 1989 onwards. The 1988 programme, for which criteria are currently under discussion, points towards initiatives which demonstrate barrier-breaking, multilingual European market characteristics. DGXIII, with the Community's own 1992 market completion timetable in mind, continue, like the UK's Department of Trade and Industry, for the right blend of carrot and stick necessary to produce a competitive national or European information industry.

The paperless office

Gordon Calvert

Vice-President, Business Equipment and Information Technology Association

Some years ago there was a rumour that the latest technology would give you the benefits of an office without paper. However, one look at most offices today shows no decrease in the piles of paper which inflict damage on our 'in trays'; in fact, contrary to belief, we are consuming more paper than ever before.

There are two particular reasons for this which probably have the most influence on the volumes of paper consumed in what should, by now, be a more paperless environment. One of these is the storage capability of today's low cost desktop computers. The other is the ability, or lack of ability, to communicate with companies and individuals worldwide.

There is no better way of looking at these issues in greater detail than to use real life situations. Digital Equipment Corporation (DEC) has always taken pride in being able to service or build the products which it has produced. This entails the ability to access all of the engineering drawings and changes which have been in use by the company since 1957.

This vast amount of information was stored on 35mm access cards and some 500,000 documents were involved.

Until optical disks came along, the thought of putting all this data onto existing media was out of the question. The raw data created by scanning one A4 sized document is enough to fill an entire floppy disk Bearing in mind that this is not text storage, a typical engineering drawing would need almost five floppy disks to store the raw data.

Even if data compression techniques are used, which could reduce the volume by a factor of 10, the scanned data from 500,000 engineering drawings is estimated to be about 94 gigabytes i.e. enough data to fill 200 high capacity magnetic disks and for online retrieval they would all need to be up and running on 200 disk drives, even with optical disk technology this translates into 47 double sided 1 gigabyte disk platters.

This amount of 'online' storage is now feasible with 'juke box' style optical disk configurations and are considered to be 30 times more cost effective than conventional magnetic disk storage.

This storage example is one way of highlighting how much storage might be needed in a paperless environment in the office. It sounds like a lot of data, but in many offices information storage and access take up a considerable amount of space and although users may only need a small percentage of the total information stored, it is human nature to hoard.

Aslib Proceedings, 39 (6), June 1987, p 197–200 Printed in Great Britain

DEC now has a database of its engineering drawings stored on optical disks, but it must be noted that in order to do this a system had to be devised to digitise the data held on the 35mm access cards.

Most offices only store what is needed for the immediate business; access to other sources of information is usually by phone, letter or personal searches.

In summing up the storage issue, the technology has not yet been developed which would allow us to have a 'juke box' sized memory on our desks, but no doubt data storage on optical disks will follow a similar pattern to that of magnetic disk storage and multiply considerably during the next few years.

There is also the need to have read/write/erase optical disks, which should be available within a few years and information systems to convert existing media to a digital format for storage disks.

Other methods of storage are being developed, such as biological memories, which might raise the question, 'how many test tubes will you have on your desk?'

Communication

Having discussed information storage and access; communication is just as important when considering how to reduce the paper mountain.

Information is invariably transmitted by hard copy or verbally over the phone, although in the past few years electronic mail, teletex, teletext and viewdata systems have been developed.

In general, electronic information flow and availability is limited to the boundaries of the company using it, which means that there is still external information which tends to arrive in the form of letters, books, reports, drawings, photographs, etc.

Electronic mail between different companies and individuals will develop during the next decade, but as an example of what can be achieved now, a brief look at DEC's internal mail system will highlight some of the benefits.

In the late 1970s DEC was looking at two small pilot schemes for electronic mail in an effort to decide which system to use worldwide within the company. Concern had been growing over the time consumed by more traditional forms of communication such as the memo and telephone. As a growing worldwide company, DEC had to deal with different time zones, holidays and mail delays. In a fast growing computer environment this was frustrating for everyone concerned.

Here are some facts about the telephone:

- less than 25 per cent of telephone calls are successful
- only 30 per cent of charged time is spent exchanging information
- average trunk call in the UK costs 80p (1985)
- average telex costs 26p (1985).

DEC's pilot schemes were evaluated and the best one chosen on the grounds that it saved time, extended the capabilities of individuals and was easy to use.

The system, called EMS (electronic mail system) was installed worldwide and allowed mail to be sent to anyone in the company by just using their names.

This was to become very inconvenient after a few years, because there were often two or three people with the same name and although the system allowed you to choose which one you wanted, it was consuming vast amounts of computer time looking up the directories of company employees.

The cost effectiveness of running this sort of system declined as the number of users grew. When 8,600 users were in the directory, 40 per cent of the networks capacity was consumed with directory traffic.

The benefit of EMS was that you didn't need to know computer node names, where the person worked, or even which continent they were working on. In other words it was user friendly.

Today's electronic mail system is still as user friendly, allows some 75,000 people to communicate easily using some 15,000 networked computers, which incidently, are also involved with running the day-to-day business of a $10 billion company.

What did DEC do to EMS to save on computer time?

By using location codes with a name, the directory access time was virtually eliminated, and because users invariably knew where the person they wanted to contact worked, there was little effort involved. The directory facility is still available, should the need arise, to find someone's location but no longer has an impact on the electronic mail system. With the latest technology it is likely that our next generation of mail system will go back to using just a name.

What have DEC achieved with electronic mail?

DEC believe that their telephone costs are 15 per cent less, a big saving if you spend over £1 million a year in the UK alone. Telex traffic is down 50 per cent and facsimile use has been reduced. Internal paper usage is less, except for the few people who like to have hard copy in their 'in trays'.

Other benefits include the time saved by being able to read or write messages anywhere in the company regardless of whether you are sitting at your desk or not.

Electronic mail is changing the role of the traditional office environment as more and more managers and secretaries use mail facilities and computers, which means more efficiency.

The store and forward facility of electronic mail is now available with voice. British Telecom's Voicebank system is an example of this — it will digitally store and forward verbal messages as required.

Speaking electronic mail systems are also available as an enhancement. This facility allows access to an electronic mail system by digital telephone where stored messages, in text form, can be retrieved through a voice synthesis unit, such as DECTALK, which responds to interrogation. This is useful if you are away on business without a computer terminal.

DEC's future worldwide 'mail' system is already capable of handling voice, data, text, graphics and video.

However, the implementation of electronic mail within a company or a vast increase in local electronic storage facilities will not reduce the paper flow from external sources. Only when there is a global electronic mail system, access to information databanks such as libraries and huge amounts of local storage will we see a decline in the paper mountain and even then you may still need a local printer.

Like most things, the paperless environment will be evolutionary, rather than revolutionary in its coming.

21 YEARS OF program

index to program

Volumes 1-20 1966-1986
Compiled by C.W.J. Wilson

An index to **Program: automated library and information systems,** which lists the author, title and subject of every article, short contribution, letter and reviewed item published since its first appearance in 1966.

Index to Program is the ideal single source reference tool for readers of **Program.**

ORDER FORM

☐ Yes please, I would like .... copies of INDEX TO PROGRAM
Price: UK £25 (Aslib members £20); overseas £35 (Aslib members £25)

☐ Payment enclosed ☐ Please invoice me
(Cheques are payable to Aslib)

NAME ____________ DEPARTMENT ____________

ORGANISATION ____________

ADDRESS ____________

____

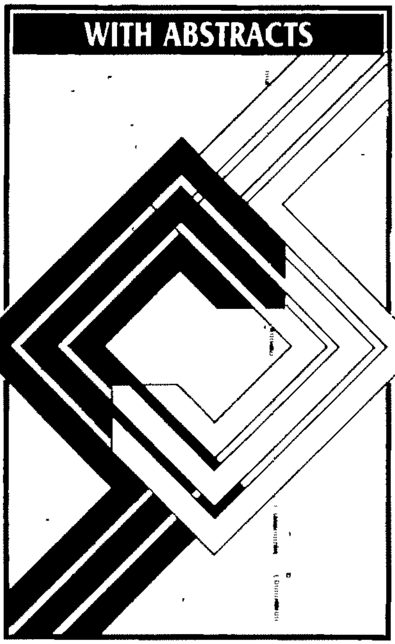
____________ SIGNATURE ____________

Aslib
Publications (Sales), Aslib, Information House,
26-27 Boswell Street, London WC1N 3JZ
Tel: 01-430 2671

ISBN 0-85142-215-2
235 × 155; 90pp; Paperback

THE ESSENTIAL RESEARCH TOOL

INDEX TO THESES



The authoritative and comprehensive bibliography of all 10,000 theses accepted for higher degrees by the universities of Great Britain and Ireland, and the Council for National Academic Awards.

- **FULL COMPREHENSIVE ABSTRACTS** offering an incisive summary of the content
- **AN ENHANCED SUBJECT INDEX** guides you quickly to relevant theses
- **TEN TIMES MORE INFORMATION EVERY QUARTER** allowing you to research with precision and efficiency

26 JUN 1989

Every thesis entry includes a subject classification, abstract number, thesis title, author, university, degree, year, document delivery ordering number and NOW INCLUDES A COMPREHENSIVE ABSTRACT.

NOW EXPANDED AND IMPROVED

Aslib

INDEX TO THESES WITH ABSTRACTS

☐ Yes please, I would like to subscribe to **INDEX TO THESES WITH ABSTRACTS** for one year. **£140** ☐ Payment enclosed ☐ Please invoice me
(Cheques made payable to Aslib)

☐ Yes please, I would like more information on **INDEX TO THESES WITH ABSTRACTS.**

Name ____________ Department ____________
Organisation ____________
Address ____________
____
Postcode ____________ Country ____________
Signature ____________

Expert Information Ltd, Woodside, Hinksey Hill, Oxford OX1 5AU, England Tel Oxford (0865) 730275
Aslib, Information House, 26-27 Boswell Street, London WC1N 3JZ Tel 01 430 2671

Aslib
PROCEEDINGS

Volume 39 Number 7/8 July/August 1987

59TH ASLIB ANNUAL CONFERENCE
THE ADAPTIVE INFORMATION MANAGER

Opening address 201
The Rt Hon Geoffrey Pattie, MP

How the organisation works 205
Rodney Drew

How to spend £10 million without really trying 209
Christine M Wares

A responsibility to change 219
Alison Shute

Director's report on Aslib 225
Dennis A Lewis

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **JULY/AUGUST 1987** **Number 7/8**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Opening address

The Rt Hon Geoffrey Pattie, MP

Minister of State for Industry and Information Technology

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

I am grateful to Lord Ezra for inviting me to address the Annual Conference of the Association for Information Management (Aslib). Given my ministerial responsibilities I have spoken to many audiences on the subject of information technology and its importance in improving the efficiency and competitiveness of all sectors of the economy. The members of this particular audience do not, of course, need the importance of the IT revolution pointed out to them. Indeed, I am conscious of the valuable contribution which Aslib members have already made, in their own right, and through the Confederation of Information Communication Industries (CICI), in promoting the perception of information as a key social and industrial resource.

The conference theme this year is 'the adaptive information manager'. This clearly takes us beyond the recognition of the importance of information to a concern for its effective management, a concern which the Government share with Aslib. In this respect we must acknowledge the insight shown by the Information Technology Advisory Panel in its 1983 report *Making a Business of Information.* The panel saw the need for a switch of emphasis from technology to information. They recognised that whatever the technical means used to process and distribute it, the information itself must be the right information supplied in the right form for its users, adapted to their particular needs.

The report identified a developing sector of industry engaged in adding value to raw data to create a potentially saleable commodity, for which it coined the term 'tradable information'. This is the sector Aslib is concerned with. It is also, as the report pointed out, one in which the Government must be involved as potentially the largest provider of data and possibly the biggest customer. I would like to talk now about how the Government has seen its role in tradable information, first of all as a *collector* and secondly as a *user* of information.

As a data collector, Government has recognised that it is in a prime position to stimulate the expansion of the tradable information sector by making its own data more readily available for commercial exploitation by private enterprise. This has been the centrepiece of the work on tradable information that is being co-ordinated by the Department of Trade and Industry under the auspices of a senior inter-departmental committee. A number of steps have already been taken:

Aslib Proceedings, 39 (7/8), July/August 1987, p 201–203. Printed in Great Britain

The Information and Technology Department has issued guidelines, to other government departments, on making information available to the private sector. This has been backed up by a series of presentations, by senior officials of the department, to those other government departments, and agencies, that are known to hold substantial amounts of tradable data.

My department has produced a tabulation of the information that is potentially available – the so-called 'data resources list'. This has been distributed to a number of companies suggested by the CICI and an encouraging number have expressed interest in receiving further details with a view to making commercial use of the information.

My department has made a number of grants towards the cost of carrying out feasibility studies into the possible commercial use of government released information. We hope in this way to encourage private sector firms to develop the market and fulfil their natural role of identifying and increasing commercial opportunities, by adding value to the raw government data, and by finding purchasers for the resulting products.

We have produced two videos which are designed to raise the general level of awareness of tradable information and of its actual and potential importance to the economy. The first video was targetted at government departments and has already been seen widely by senior officials. The second video, which has just been completed, is aimed at a broader audience. We plan to distribute it both to the information industry and, more importantly, to potential users.

One of the recommendations of the Information Technology Advisory Panel was that the Government should make more use itself of machine-readable data. This has been standard practice for some time in certain areas, such as HM Customs and Excise, but we believe that more could be achieved. Therefore, we asked a wide range of other government departments to identify at least one area where they thought that the use of machine-readable data could be increased. We have used external consultants to analyse the results and to identify areas of potential commercial value, particularly when these involve bringing together separate banks of data.

The Government also has a role as a user, and purchaser, of information services. We have taken steps to raise the level of awareness of our own officials of the importance of information and of the services available from the private sector. Statistics for government as a whole are not available, but within my department some £50,000 was spent on online services in 1985/6 – a substantial increase over the previous year.

The Government, however, will not buy what it does not need, nor will the expansion of government purchases necessarily go to UK companies unless they are the best sources of the information we need. It is primarily the responsibility of the tradable information sector to market itself successfully to the public as well as the private sector in order to develop and expand the industry.

In its wider relationship with the information industry, the government is conscious of its role in assisting market development by:

- not competing with the private sector
- tackling legal, regulatory and other constraints
- promoting the formation and use of standards
- gathering statistical information on the tradable information sector to provide a basis for coherent planning by companies within it. Our statisticians are jointly tackling the question with academics and industry and I think we can expect to see a much more relevant statistical description of the industry in future.

Our support for the UK information industry should be viewed in the wider context of the European information sector. The UK is very much involved with its EEC partners in developing a European common information market policy. The various issues that have to be addressed by the EEC parallel many of the UK's domestic concerns.

The need to ensure that copyright and related rights are protected is certainly of prime importance to the UK. On the regulatory front, although the UK has the most liberal licensing regime for information services in Europe, the plethora of different regimes in Europe as a whole makes for anything but a common information market as it stands. If progress is to be made, this area certainly requires particular attention.

The harmonisation of technology standards should certainly also be a high priority. The UK's commitment to open standards interconnection (OSI) and the provisions in the new value added and data services (VADS) licence relating to OSI again emphasise this point. The extent to which harmonisation of information needs separate attention is less clear.

The need for statistical and related market information parallels a similar need at a national level. If there is to be a common information market, it is reasonable to have reliable and meaningful information about the nature and size of that market.

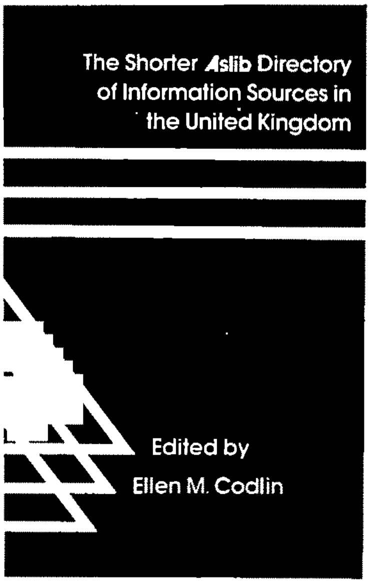
The UK is leading Europe in the field of exploitation of government-held information by the private sector Our European partners are very conscious of the fact that the public sector has a role to play as a provider of raw data, so that the private sector can add value to order to exploit it commercially on the same basis as other vendors. I am quite conscious too that in a European context, the terms public and private sectors can sometimes mean different things in different markets – that is perhaps one of the more difficult problems to solve.

I am very much aware that the information market in the UK, and indeed in Europe, is in need of sensitisation and development. The Government is grateful for the contribution of organisations such as Aslib to this essential task, whether this is directly through its own membership, by its membership of the CICI, or by its influential role with DG–13 of the European Commission.

Aslib members, because of the nature of their professional activities, can be of particular help in stimulating information entrepreneurship – the identification and promotion of potentially commercial information. I am grateful to Aslib for its efforts so far and I am confident that it will continue to play a major role in promoting the information industry.

THE FAST AND EASY WAY TO TRACK DOWN INFORMATION

Concise, comprehensive and authoritative, The Shorter Aslib Directory is the ideal single source reference tool for librarians, journalists, students, writers and researchers of every kind, and anyone whose catholic tastes incline them to journeys of discovery through its pages.



The Shorter Aslib Directory of Information Sources in the United Kingdom

Edited by Ellen M. Codlin

- *Full entries with lists of subsidiary bodies and branches, where appropriate.
- *A comprehensive and cross-referenced subject index.
- *Cross-referencing in the main body of the text.
- *An index of abbreviations.
- *The title of the person in each case to whom application for information should be made.
- *The inclusion of both telephone and telex numbers for each entry.

The Shorter Aslib Directory, edited by Ellen M. Codlin, is available from Aslib and costs £60 (£65 to overseas customers)*. Send payment to Aslib Publications (Sales), 26–27 Boswell Street, London WC1N 3JZ.

*£10 discount to members of Aslib.

254 × 160mm; 1986; viii, 590pp
ISBN 0-85142-199-7, hbk.

Aslib

How the organisation works

Rodney Drew

Managing Director, 3i Consultants Limited, London

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

Over the past few years, organisation after organisation has gone through change and upheaval. Whether you call this rationalisation, reorganisation, or just 'the cuts', the eighties have seen an ever increasing concern with performance, productivity and profit. In this climate, many of the old familiar ways of doing things have been discarded, sometimes to be replaced with new innovative methods but all too often with the simplistic idea of 'back to basics'.

Arguably, though, there were many organisations in which this approach was long overdue. I have never been able to get out of my mind a quote from the American business magazine *Forbes* a few years ago. An article on the UK business scene ended – 'there is the inescapable conclusion that in Britain today there is no necessary connection between being unemployed and actually being out of a job'. I think we would all find it easy to agree that is no longer the case

Making cuts in inefficient or overstaffed organisations may often be urgent and essential – the right course of action in the circumstances. It is rarely enough on its own, simply because, after cutting back, the organisation will need to be pulled up again. While the cuts may engender a sense of realism, this in itself is rarely enough stimulus for the rebuilding phase which must follow. Unless the cuts have been left so late that they become the last ditch action before the death of an organisation, the guiding principle for any action should be strategy before structure. With that principle in force in the first place, last minute cuts might never have been necessary. Still today, time and again, organisations which are demonstrably leaner and more efficient than they were several years ago, lack a coherent strategic context. Its presence or absence is easy to diagnose and is a key factor in gaining an understanding of how the organisation works. Think of your own organisation. Ask yourself some simple questions. Start with 'Why are we all here and what are we trying to achieve?'

All too often, organisations that have attempted to write down an answer to this come up with a corporate philosophy or mission statement which reads more like the boy scouts' law than a cogent statement of what the key strategic focus is. In another context, how many times have you heard from supposedly the best organised companies in the land, when they unexpectedly receive a takeover bid, that the shareholders misjudge their

Aslib Proceedings, 39 (7/8), July/August 1987, p 205–208. Printed in Great Britain.

full potential and misguidedly allow the bidder to triumph? Those same companies don't know (or won't reveal) where they are going but still complain about only being measured on where they have been.

A clear strategic context is not simply valuable externally. Within the organisation, people need to know what the business is trying to achieve so that they can work in support of its aims and objectives and employ their talents in the most effective manner. Put another way it helps everyone understand how the organisation works.

This is as relevant for people in information management as anywhere else. Perhaps more so, as the job not only involves an intricate understanding of the organisation in a structural sense but also of what information will be valuable to people in carrying out their tasks. Discovering an organisation's strategy and central purpose can be difficult. Top management may not respond well to blunt questions about strategy, an area they always seem to find difficult to articulate. They are often reluctant to commit themselves, preferring so-called flexibility to clarity of purpose. But in an environment where the strategy is clear, there are a number of advantages.

A key benefit is that a much greater proportion of the work of controlling and managing the organisation can be transferred from intricate systems to the intelligence and innovation of the people working there. This may sound like bad news for the bureaucrats, but those who dislike the idea of leaving more decisions to the people in the organisation have to ask themselves why we spend so much time trying to hire intelligent individuals in the first place.

A unity of common purpose is by far the most powerful driving force for an organisation, but it is all too often found only in voluntary or perhaps political activities, in small entrepreneurial businesses rather than in the larger structures which could gain so much benefit from it. A clear strategy is a prerequisite to achieving this.

If having a clearly stated strategy is the key to understanding the organisation, how do we move to this happy state? Perhaps it sounds like Utopia. Not so. To start with, every organisation has some form of overall strategy, even if it remains largely implicit. The first stage, therefore, is a process of discovery.

The most basic way of revealing current strategy is to observe what an organisation does, rather than listen to what it says (or writes). The 'man from Mars' method, asking the question 'Given what I observe that the organisation is actually doing, what must it be trying to achieve?' from the position of the completely uninformed observer, can lead to some very amusing conclusions. Once current strategy becomes a little clearer, and before considering the detail of the organisation, some time needs to be spent considering what the organisation ought to be doing, and whether this is any different. Often it is. This is mainly an outward looking process, considering the market, how it is segmented, what the competition is doing, what the customers really want and how best to respond to them. It can be an uncomfortable process, frequently revealing poor alignment between current circumstances – products and services, skills, resources, delivery methods etc – and the ever evolving needs of the consumer.

In summary so far, understanding the organisation is intimately connected with understanding its overall strategy – its essential purpose. Furthermore, there is little point in going straight on to examine the organisation in detail without immediately considering whether or not its current strategy is directly relevant to its marketplace position and consumer needs. If it isn't, what then?

The temptation is to start a systematic analysis of the current organisation. This is easy to do but may not be very productive. After all, if we need to adopt a different strategy, the first priority is to work out what qualities the organisation needs to deliver it. These may be descriptions of skills and resources but often need to include attitudes as well, things like leadership, flexibility and responsiveness for example.

Only then can we get to the core of the issue, namely understanding how the organisation works in qualitative terms and then working out what we need to do, what changes we need to make to achieve the requisite qualities we have identified.

What if these changes are fundamental, perhaps daunting? They often are. People's natural reaction to change is against it – it can be uncomfortable, disruptive, increases the workload and leaves no chance of a quiet life. The alternative to initiating change yourselves, that is someone will do it for you. And inevitably they will do it with less sensitivity, less concern for the sort of future you want to see, and less concern for you personally because the type of change imposed from outside comes in the form of cuts, receivership, takeover, merger or some similar blunt instrument. It usually comes when your organisation has not taken care to keep itself up-to-date in its response to market needs and has become tired and worn out.

However uncomfortable changing your own organisation might be, it is rarely as traumatic as the alternative. Taking the initiative at least leaves you in charge of your own destiny.

How is it all done? For a start, change requires good leadership. Not so much the old fashioned autocrat, but someone who believes passionately in the organisation and wants to see it achieve the best it can. Someone who believes that the key to this is enabling all the people in the organisation to contribute the best they can. Does this sound like Superman? Not really. There is abundant proof that single individuals *can* have a remarkable effect on even the largest organisation. Look at the massive change that has taken place in ICI under the direction of John Harvey-Jones in only a few short years. Interviewed recently on BBC radio he said 'management's job is to take the fear out of change' and a great deal of that is achieved by the people in an organisation knowing and understanding the challenges that face it and how it needs to act in order to meet them.

Facing up to reality – usually the reality of the marketplace – is a critical component of establishing robust, deliverable strategies. If the market doesn't like our products or services as much as they did, if the competition is providing them better or for less, if there are new offerings in the marketplace we can't match, it is usually well known to the people throughout the organisation. What is unusual is an open admission of such things, internally, from the top of the company. Failure like this to do so leads to lack of respect for top management, which in turn means there is no mandate for change or development. Given a clearly articulated new direction, the vast majority of people are prepared to make it happen.

This need not be so gloomy; I have already demonstrated that it is easy to change a climate, even in the largest organisation, and react to the market and other conditions affecting it in a positive and constructive way. The reality of today's climate, though, is that organisations are facing more challenges, more difficulties and more pressures than ever before. All of these have an impact on the organisation's people and it is only they who can react to them and find a way forward.

My recommended approach to meeting these challenges involves not simply understanding how the organisation works as it is, but understanding how it needs to survive and prosper independently in the future. Then it depends on the people in the organisation facing up to reality and determining to make change happen for themselves.

How to spend £10 million without really trying: financial control and resource management

Christine M Wares

Director of Libraries and Arts, London Borough of Camden

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

Before considering the financial responsibilities of a Director of Libraries and Arts in a local authority, I would like to set the scene in my own authority, the London Borough of Camden, in order to put my remarks in context.

Libraries and Arts is one of 12 council departments serving a local population of 172,000 and daytime population of double that number with the influx of commuters, workers and students into the borough each day. The Council's total financial requirement to continue running jobs and services at the present level in the next financial year is estimated at £197.9 million. The estimated product of a penny rate is £1,150,000 and rates are levied at about 232 pence in the pound. The expenditure level set by the Government in accordance with the Rates Act is £142m – a shortfall of £56m on the amount needed to continue running jobs and services at the present level.

Within this context, Libraries and Arts is one of 12 separate council departments and has a total estimated budget of £10 million in the current financial year. There are 14 libraries, including three very large ones at Swiss Cottage, Holborn and St. Pancras, opening 60 hours, six days weekly. 400 staff provide comprehensive educational, recreational, leisure and information facilities to 162,000 readers, who borrow 3,000,000 items annually from a total stock of 1,000,000 books, audio-visual items, videos, computer software, original works of art, toys and talking books, completely free of charge. Arts and entertainments staff within the department organise over 700 events each year in all parts of the borough, including the internationally acclaimed annual three week Camden Music Festival. The Libraries and Arts Department also includes the 510-seater Shaw Theatre which is part of the St. Pancras Library building complex and which promotes a year-round mixed theatre and music programme. Also Keats House, where the poet John Keats lived for three years in Hampstead and which attracts 30,000 visitors annually from all over the world.

In considering the financial responsibilities of a Director of Libraries and Arts in a local authority such as Camden, I would say that the prime responsibility is to acquire money to run the service. In Camden, the two main problems in doing this are:

- it costs a great deal of money, namely £10 million in the current financial year, to run Camden's Libraries and Arts Department
- it costs considerably more than any other library service of a comparable size, which means that local councillors who hold the purse-strings need a great deal of persuading that the estimated costs are fully justified and absolutely necessary.

The first step in acquiring the money is, therefore, to convince councillors of the value of the service, so that they will give it some priority in their council-wide deliberations. Fortunately we are working with enlightened, enthusiastic councillors who are convinced of the importance of libraries, the arts, the theatre, museums, recreation and leisure services generally. This is the exception rather than the rule and in most authorities usually proves to be the first stumbling-block. Even with keen councillors such as in Camden, we can never rest on our laurels, or be sure of our ranking in their scale of priorities, but have to take every possible opportunity to publicise, promote and market libraries, arts, theatre and museum services and to keep a high profile within the council and the local community as well as reassuring elected members that we are giving a value for money service.

The next step in acquiring the necessary funds is to be able to forecast accurately the cost of jobs and services in the coming financial year. Councillors will very quickly lose faith in a chief officer who cannot do this and will, just as quickly, see through any attempts to hoodwink them about the cost of services. Annual estimates, both capital and revenue, must be prepared and presented honestly and accurately and in the light of the latest information available e.g. if the average cost of inflation is running at 5 per cent, and the Director of Libraries and Arts has evidence from the book trade that the actual inflation rate on books and other materials is as high as 17 per cent, or as low as 2 per cent, this is the figure to be submitted with all the corroborating evidence.

The detailed preparation of estimates in a department like my own which is financially responsible for 15 major public library buildings; Keats House Museum; the Camden Arts Centre; three theatres and an arts and entertainments programme consisting of over 700 events per annum, is a long, tedious and painstaking business, taking several weeks each autumn to compile and complete.

As in all local authorities, every single penny spent in the next financial year has to be recorded on lengthy sheets supplied by the Director of Finance under detailed headings, indicating the cost of, for example, repair and maintenance of buildings; telephones; salaries; materials etc in different columns for the previous financial year, the current year and the estimated sum for the following year. This has to include an element of inflation, and the reasons for any request for financial growth over and above this have to be clearly shown. In addition, a breakdown showing the costs for each library and each building within the department has to be prepared to show how the total requirement has been reached.

This exercise has to be repeated under hundreds of different headings for libraries, arts, theatres, art centres and museums which fall within the purview of the department. As well as major items like salaries, building costs, books and materials, equal consideration has to be given to smaller items such as travelling and car allowances, attendants uniforms; subscriptions to outside bodies e.g. Victoria County History; replacement of theatre technical equipment and lights; the cost of artistes in next year's arts and entertainments programme; window cleaning; maintenance costs on computer equipment; subsidies for neighbourhood festivals; printing stationery and postage and much more besides taking up, in our case, about 50 closely printed detailed sheets.

Once this has been done, the estimates travel along the following route:

a) Close scrutiny by the Director of Libraries and Arts who will probably not have handled the detailed working out. The first trimming will take place if, at this stage, some of the initial items included seem to be impractical, extravagant or potential dynamite politically.
b) The Chief Officer and departmental Finance Officer will then repeat the exercise with Finance Department colleagues making revisions where necessary.
c) The estimates are considered by the Leisure Services or other appropriate service committee, who may refer them back to the Chief Officer for further scrutiny or justification.
d) At this juncture the Committee Chair and Chief Officer usually have very long sessions going through the sheets in detail, so that the Chair has a full and complete understanding of all the requirements and of how the figures have been arrived at. Only then are they in a position to argue behind the scenes and in political gatherings e.g. group meetings of the majority party when the Chief Officer will not be present.
e) The estimates then continue through the committee cycle culminating at the meeting of the Policy and Resources, or Finance, Committee which takes an overview of the effect of all the departmental budgets on the rate to be levied on the domestic and commercial ratepayers in the coming year. At this meeting each chief officer has to fight their own corner knowing that Council's priorities may well be in other areas such as housing, social services, sewers or road repairs. At this crucial stage, the rate is fixed and budgets agreed for final ratification by a full meeting of the Council.

Not only does this whole process require financial knowledge, wizardry and understanding of accountancy, but the whole thing has to be set against the backcloth of the political context in which you are working.

In preparing estimates, the Director of Libraries and Arts has to be constantly aware of the political priorities of the Council as set out in the most recent election manifesto; of the place of the Libraries and Arts

Department within the Council as a whole; of all the ramifications and restrictions of local government finance and last, but not least, of the effects of central government edicts, e.g. the Rates Act, on the spending powers of the local authority. Libraries cannot be considered in isolation, but as one part of a much larger local authority. If, as in Camden, Libraries and Arts is a separate, stand-alone department with the Director being a Chief Officer and a member of the Chief Officers Board, and accountable direct to a Chair and Committee of the Council, then a very important hurdle is surmounted. Directors will be able to speak for their departments direct in the corridors of power, rather than through an overlord who is not familiar with libraries and arts services. In my experience, there is far more chance of acquiring the necessary funding in this way than in any other e.g. when libraries are part of a leisure services directorate or huge education department which is the common pattern now in most local authorities.

After the budget allocations have been agreed the next responsibility of the Director of Libraries and Arts in Camden is to ensure that £10m of ratepayers money is spent wisely and effectively and that value-for-money is achieved under every item of expenditure. This is done in conjunction with the departmental finance and administration officer; representatives of the Council's Finance Department; local and district auditors and many others besides. We were very pleased in our Libraries and Arts Department to receive the ultimate accolade when the Audit Commission found value-for-money in our library services, after a very intensive investigation. Nothing could be further from the truth than that a high-spending authority like Camden is a profligate one. Every single penny is checked and re-checked and thoroughly accounted for. High spending inner-city councils have many calls on their purse strings and it is in the interests of everyone that value for money is achieved.

An integral part of the budgeting exercise, and another major financial responsibility of the Director of Libraries and Arts, is to ensure that meticulous and accurate records of expenditure are kept by spending officers throughout the department and monitored centrally by the designated finance officer. This is often the deputy or assistant director, although we are fortunate in Camden in having a finance department-trained officer to deal with all our financial and administrative matters. Part of his role is to ensure the books balance at the end of the year and that there are no substantial over or underspends as these will jeopardise the next set of estimates.

Part of the financial responsibility of the Director of Libraries and Arts entails advising the council on aspects of financial management and control, relevant to the Libraries & Arts Department. This often involves explaining the legal background to certain aspects of our work and answering questions e.g. why are we bound by the terms of the Net Book Agreement? Why can we charge for the loan of records but not for the loan of books? Is it legal to sell library books to the public after they have been withdrawn from stock? Is it legal to make decisions concerning the provision of library materials in light of political considerations e.g. the News International dispute which led to the removal of certain newspapers from many public libraries until the High Court declared such an action to be illegal and they were reinstated.

As well as securing the money necessary to provide a 'comprehensive and efficient service' in accordance with the Public Libraries and Museums Act 1964, the Director of Libraries and Arts is responsible for ensuring the estimated amount of income is achieved for fines, reservations, hall bookings, photocopying, arts and entertainments promotions, theatre box office, local history publications and Keats House sales and donations. In Camden we do not charge for the loan of any materials, so users can borrow records, cassettes, videos, computer software, original works of art, pieces of sculpture and educational toys free-of-charge. They can also receive detailed information from the online information services free, an invaluable facility especially for the commercial and legal clientele served in the Holborn area. However, we are required to obtain income from the other sources mentioned in order to offset expenditure to the greatest degree possible in accordance with the council's guidelines. And also, whenever possible, to acquire business and commercial sponsorship to support some of our activities e.g. Camden Festival, visual arts promotions and Shaw Theatre productions. A small committee composed of councillors, officers and representatives of the business, commercial and banking worlds has been set up specifically to acquire sponsorship for the Camden Festival and commercial sponsorship is also sought for Shaw Theatre productions, major exhibitions and appropriate arts and entertainments activities.

So, in summary, the financial responsibilities of a Director of Libraries and Arts in an inner-city London borough authority such as Camden are:

- to acquire the money to run the libraries and arts service and justify the estimated costs to council members
- to forecast accurately the cost of jobs and services throughout the department for the whole of the next financial year
- to calculate the cost of capital projects, and foresee requirements for at least the next five years
- to estimate costs against the political background of government intervention and the local authorities priority areas
- to ensure ratepayers money is widely and well-spent achieving value for money
- to keep accurate records of expenditure to date, orders placed and projected expenditure
- to ensure the books balance and all the accounts are reconciled at the end of the financial year
- to ensure the legality of all expenditure and advise the council accordingly
- to obtain the requisite amount of income in accordance with council policy, partially to offset expenditure

- to advise the council on all aspects of financial management and control in the work of the Libraries and Arts Department under the powers delegated to Chief Officers by the standing orders of the Council.

I mentioned the District Auditor earlier and a value-for-money review conducted by the Audit Commission on the library service in Camden. This exhaustive review followed an earlier suggestion from the Audit Commission concerning drastic reductions in library expenditure, shorter library opening hours, reductions in staffing levels and, last but not least, closure of five named branch libraries which were declared to be expendable! These suggestions were made in a letter to Camden based solely on information gleaned from CIPFA statistics, and using meaningless comparisons with other local authorities. It was devised in a void without any prior consultation or discussion and without any first-hand visits being made to Camden libraries. In view of the vociferous outburst this provoked, representatives of the Audit Commission later visited Camden libraries to establish for themselves whether our higher-than-average expenditure levels did, in fact, represent the profligacy they suspected. After an exhaustive review I am pleased to say the Audit Commission were impressed, and surprised at what they saw. The range, standard of, and public response to, our services were an eye-opener and they declared that they had found value for money in the running of the service. They even went further and suggested various ways in which the library services should be developing, growing and expanding because of the obvious public needs and demands. These areas of work included multi-racial and community information services and the loan of videos and computer software – all of which we are now doing. Who were we to argue with the helpful suggestions made by the Audit Commission?

This is only one example of the many scrutinies to which we are subjected by agencies external to the Libraries and Arts Department. These include the local internal auditors who keep our estimates, income, expenditure and general routines under the closest financial scrutiny on a continual basis. Then there is the district auditor who monitors the accounts of the Council as a whole and, more occasionally, the Audit Commission which hones in on various specific aspects of the Council's service e.g. refuse collection, central purchasing or libraries.

Also, last year Camden Libraries were reviewed by the Office of Arts and Libraries. The library adviser, like the audit commissioner, was anxious to establish why Camden libraries cost a great deal more than other library services of a comparable size. This one came about because of a rebuff from the Office of Arts and Libraries when seeking their support, advice and assistance in defending Camden libraries from the possible effects of rate-capping. Their response to the news that our budget could be cut by approximately 70 per cent over a five year period was to point out that Camden would not have to be rate-capped if it would reduce its expenditure to the level suggested by the Government. To quote from the letter:

> 'Camden has for many years had the highest level of expenditure per capita on libraries for all the inner London boroughs and should be able to use the resources built up over the years to provide a useful cushion during the period of adjustment. We would welcome being kept informed about how reductions in the service will be achieved.'

Following this my colleagues and I were pleased when a library adviser subsequently agreed to come along and find out how our services actually worked, how they were funded, how they were used and whether our high expenditure was actually justifiable rather than profligate. Like the Audit Commission, the Office of Arts and Libraries found value for money in our library services and established independently that the many complex factors accounting for our much higher than average expenditure included the following:

a) CIPFA library statistics are expressed in terms of £s per 1,000 resident population. Camden's day-time population doubles and many of these commuters use the library service, and this has not been taken into account in the calculations in the past, although CIPFA is now doing so.

b) One-sixth of our library budget goes on central administrative charges over which we have no control. This figure (per 1,000 population) is more than 20 times that of the lowest figure for any other inner London borough and more than twice that for the highest. The district auditor is now investigating why these charges vary so drastically from one borough to another.

c) Camden Council's generous conditions of service, personnel policies, maternity leave, careers leave, dependency leave, bereavement leave, training facilities etc., over which the Director of Libraries and Arts has no direct control, means that the cost of buying an hour of staff time in Camden is higher than the average in other local authorities.

d) Three large central libraries and several branch libraries have reached an age where expensive maintenance and remedial work is needed. Also loan and debt charges on modern buildings in central London are very high.

e) Many residents of neighbouring boroughs, who do not live, work or go to school in Camden, use the service because it often compares very favourably with the local services on offer to them.

f) High standards of service and a wide range of services in a library authority long considered a centre of excellence, coupled with exceptional use made of the service by the public. A recent MORI poll told us that in the previous week 25 per cent of local people had used a Camden library; in the previous two weeks the figure was 33 per cent – a high proportion. Needless to say, library workers and refuse collectors came out top of the MORI poll on council services as the most friendly, helpful and responsive to the public. 75 per cent of local people are library users in Camden compared with the national average of around 30 per cent.

My colleagues, Council members and I were very heartened that the adviser from the Office of Arts and Libraries had nothing but praise for Camden library services following their investigations. He was impressed with the services provided, having visited eight out of Camden's 14 libraries. Book issues, he said, per head of resident population, are the highest in the country and substantially above average. Loans of other media (records, cassettes, etc.) are approximately six times the national average. Use of reference libraries is high as is use of libraries for class visits, reading magazines and newspapers, and cultural and community events. 'Services provided in Camden are of a good standard and I saw many instances of good practice' he said and noted particularly the provision of media other than books 'being regarded as normal' and available from all libraries for most client groups including elderly people, people from ethnic minority communities, young children and teenagers. He concluded by saying:

> 'The excellence of Camden's achievements in these and other fields is demonstrated by the number of visitors from this country and from abroad who visit the service. Clearly Camden is in a position to help other library authorities improve their services and I hope will continue to do what it can in this area'.

This welcome review, at a time when the real threat of rate-capping was beginning to loom very large, proved yet again – and publicly – something that the people who live and work in Camden already appreciate about their library service.

In a press release the chair of our Leisure Services Committee said:

> 'We are confident that the Office of Arts and Libraries will be reporting Camden's 'good practices', 'value for money', and dissemination of community information 'unequalled elsewhere' to the Minister for the Arts. Unfortunately, we are equally as confident that this will be totally ignored by the Government which is determined to cut our spending no matter what the cost to services. However, this has only served to strengthen the Council's determination to defend libraries and arts services at all costs'.

I mention this particular review as a good example of these sorts of polls, reviews and surveys which can be very helpful in the budget process and in the defence against rate-capping and other manifestations of economic restraint. At the very least, they provide good evidence for discussions with councillors and local pressure groups e.g. ratepayers organisations, tenants' associations etc, about levels of expenditure, standards of service and value-for-money.

Roughly speaking, the breakdown of Camden Libraries and Arts £10m annual budget is very simple and straightforward:

Salaries	£5 million
Buildings	£1 million

Materials	£1 million
Arts, entertainments, theatre	£1½ million
Central administration charges	£1½ million

As you will realise, in order to maintain the existing level of jobs and services, it is essential to retain the present budget, 50 per cent of which is accounted for by staffing costs alone. The main problems in spending this enormous sum of money each year lie in acquiring it in the first place, budgeting ahead accurately, maintaining commitment accountancy procedures, ensuring there are no overspends or underspends, paying invoices on time after careful checking and ensuring value for money is achieved in all aspects of the service.

There is a school of thought which subscribes to the view that a chief librarian can be regarded as successful if all they achieve is the acquisition of the necessary money to run the service each year. Whilst I cannot entirely agree with this point of view, because of all the other things calling out for attention and action each day, it does contain a kernel of truth. Without the necessary finance to meet essential costs of jobs and services there will be no jobs and services, which means this has to be an absolute priority task for a Director of Libraries and Arts in a local authority. It is very easy to spend £10 million without really trying but rather more difficult to ensure it is well spent and achieves value for money.

21
YEARS OF
program

index to program

Volumes 1-20 1966-1986
Compiled by C.W.J. Wilson

An index to **Program: automated library and information systems,** which lists the author, title and subject of every article, short contribution, letter and reviewed item published since its first appearance in 1966.

Index to Program is the ideal single source reference tool for readers of **Program.**

ORDER FORM

☐ Yes please, I would like . copies of INDEX TO PROGRAM
Price: UK £25 (Aslib members £20); overseas £35 (Aslib members £25)

☐ Payment enclosed ☐ Please invoice me
(Cheques are payable to Aslib)

NAME ______ DEPARTMENT ______

ORGANISATION ______

ADDRESS ______

______

______ SIGNATURE ______

Aslib

Publications (Sales), Aslib, Information House,
26-27 Boswell Street, London WC1N 3JZ.
Tel: 01-430 2671

ISBN 0-85142-215-2
235 × 155; 90pp; Paperback

A responsibility to change

Alison Shute

Devon Library Services

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

This paper is based on public library experience and draws mostly on Devon but aims to cover themes and messages which apply equally to other libraries and information services.

Change has become very much the buzz word of the eighties – we have become almost obsessed by it. Hardly a day passes without the emergence of yet another conference, seminar or course on the theme – the management of change, the climate of change, the challenge of change. The titles are all familiar. From all quarters we are told that to stand still is to become extinct and to adapt is to survive. In itself change is obviously nothing new, but whereas in the past it was a fairly quiet and unspectacular affair, now it actually needs to be seen to be a conscious act, carried out with some degree of panache. The tools of change are different, so too is the tempo, but the most important ingredient is the human factor – staff who are willing to walk the road of change. Those who came into information work through public libraries in what in hindsight now appears as the golden age between 1966–74 entered a world of growth – although we didn't necessarily see it that way at the time. The truth was that during that period there was a 50 per cent increase in local government manpower, the provision of a comprehensive library service was made statutory and it was the era of new buildings and new services – in public libraries technical information services were in vogue. The 1970s ushered in the British Library and created public library authorities of adequate size by virtue of local government reorganisation in 1974.

The point is in that climate, with growth as our tool, we changed by a totally painless process. With additional money flowing into budgets each year all our professional wishes could come true. It was simply a matter of time – a matter of manoeuvring projects into the financial queue with political blessing.

The disappearance of financial growth has brought an end to all of this and the net result is that we have lost our only accepted way of altering the status quo. But, ironically, the need to change is greater now than ever before and the major role of any manager worth their salt is not to run things, not to simply oil the wheels but to change things. *Laissez faire* rarely makes the headlines and wherever we are in the information world we need the higher profile and resources that can come with innovation.

As a portion of the whole, library/information service budgets are

Aslib Proceedings, 39 (7/8), July/August 1987, p.219–224 Printed in Great Britain

invariably small. In local authorities there is the added problem that government controls loom large. In some authorities rate capping militates against financial readjustment locally. These factors combine to reduce the ability of an authority to make its own financial decisions. Libraries and information services must stand judgement alongside the giants: education, social services, the county engineer and his ubiquitous and finance-pulling potholes. Even if the financial case for information services can be made all is not necessarily won because local government doesn't find it easy to effect a dramatic change in its allocation of resources. To recognise that school roles are falling whereas an increasing number of physically and mentally handicapped are living out in the community, and need support including welfare information, is one thing. To actually move money from one heading to another to respond to the new situation is another question. Redundant classrooms don't easily become day centres for the handicapped, even less easily do they become resources for reference libraries, community information or business information services.

To make any headway in the local political/cash control scene needs the impact and high profile that change can bring. So, to matter in the financial/credibility stakes any information service must be seen to be constantly reconsidering its nature and responding to the wider issues of its client community whether this is the public at large or the management of a large firm or research establishment. In the public library field it is important for us to remember that, as officers of the local authority, public librarians tend to see the service as theirs, as part of a profession. Elected members, who disperse the funds and control policy, see it as theirs – they see it not as an isolated service but as part of their community. As these major community issues change and evolve so too must the information service on offer. If the wider and changing issues of the parent body are not embraced there is a danger that information services will have no role in the major aspects of local or national life. The 1974 Home Office Urban Deprivation Unit report says libraries (and others) felt remote from the problems of urban deprivation. Jeremy Seabrook has written about neighbourhood information in Walsall but does not talk of libraries and information services in this context. These examples perhaps indicate something of public perception of the library world in the past. Changing this perception is a continuous process for which we all take responsibility.

In my own authority the major issues are very much concerned with rural well being – the deregulation of buses, keeping small and remote communities alive and keeping them well informed. It is to these issues that we have addressed ourselves as a way of ensuring continued support for our core professional service. For this reason research projects in Devon libraries have focused on the potential of local community information centres. Research has been used very deliberately as a vehicle of change. Through the British Library funded South Molton Community Information project, research has been used to slowly transform the face of the information service and to prove that we are not simply all about professional niceties, but about problem solving in the real world. People living in rural areas have information problems which are no less severe, if less visible than those living in inner city areas. Information problems in rural areas are not merely as great as those in towns but they are frequently more difficult to satisfy. Problems remain unsolved simply because there are no services to turn to. This is an opportunity for the library viewed as neutral and non bureaucratic service to contribute to solutions. As the public perception of the library service alters so the role of libraries as a local catalyst emerges.

The information service on offer from the community information centres which are gradually being developed have never been the child of big brother – the county council. The initiative for their birth and continued well being has always been placed fairly and squarely in the hands of the local community, in the form of a local management committee. Their function has extended far beyond that traditionally expected of a local authority information service. What began life as a loose association of information and advice agencies sharing a suite of rooms on library premises on a non-territorial basis has become a strong local community force producing self financing accommodation guides, and tourist attraction leaflets far beyond the aspirations of most communities of its size. Reversing the pyramid and exchanging the top down for a bottom up approach requires new managerial and professional attitudes. It requires a willingness to accept new working partners and relationships, but it opens the door to a much diversified range of services.

In recent years additional research money from the British Library and Rural Development Commission has brought technology to these same centres – not only is this being used as part of the information service it is being used to improve computer literacy in rural areas and to allow the local community to identify for itself applications of new technology which may have local business or commercial spin offs. This particular innovation, popularly referred to as the PIRATE project (Public Information in Rural Areas – a Technology Experiment) uses micros and touch sensitive screens. In due course it will become a bolt-on feature of other technology within the department. The stock management system involving 36 libraries, work stations, online search facilities, fax and the PIRATE concept will be part of an integrated whole. In terms of local information handling the network will have one great advantage over a centralised system in that each local community has within it the motivation to maintain database currency thus getting over the perennial problem of updating large quantities of information. This will produce what is in effect corporate databases the constituent parts of which will be created and held locally. On the other hand, a factor in the modern information world is the inevitable centralisation of certain information resources. With computer databases centralised and capable of being accessed from anywhere in the world, the problem for any information professional becomes one of de-centralising delivery and concentrating on needs. In any large authority, local transport and the cost of private travel make it important that all outlets are seen as potential delivery points for the total library package including information services. The large central libraries will always be the 'superstores' but the aim must be to make their wares increasingly available through every local library.

Technology clearly comes into its own in combating distance – the dream, which is very slowly becoming reality, is of an unbroken information chain. Village schools linked into branch libraries which link with large central reference libraries/county hall mainframe and give access to national/international databases. Nothing can be allowed to stand still. To see a vision of the broader whole, to have the persistence to develop doggedly our own small portion of that wider scene towards the goal is the stuff of change and, therefore, of development and growth. Equally, it is important not to underestimate the power of the small unit within a large organisation. The drive of the individual is the ultimate strength of the organisation.

As far as the public sector is concerned government proposals to introduce more competition into local authority services have been delayed but every aspect of current practice has to be challenged now. Whilst, at least in the foreseeable future, mainstream public library information services will be shielded by the act, we must not assume that this will always be the case and certain elements even now can fall outside. If measures on competition are introduced – will private sector entrepreneurial information specialists seek to service the elected members, thus competing with the local government information services developed by many local authorities? Existing services need to be retuned now to give them a fighting chance. The public sector has no choice – it must change.

In the Devon library service, as probably happens in many other large organisations, information technology has been taken very seriously and considerable energy and resources have been injected into its development. Interestingly, the county council has adopted a bottom up approach (i.e. started with word processing and typists). Top management has been supportive but obviously not directly involved as practitioners. Within recent months the need to change this situation has been appreciated and top tier staff are being offered the chance to acquire some of the new skills, including touch typing, which they realise they too need if they are not to be isolated by a new type of illiteracy. How can we control and use computer based information as an organisational resource if, as top managers, we don't ourselves come to grips with its use? A large organisation produces quantities of information almost at the drop of a hat. Held in bulging files, memos and drawers it can be accessed by anyone at any time – held on computer files its immediate availability to top decision makers; those who need it most; it can be impaired and is certainly dependent upon the retrieval skills of others. The general mood in the library/information services these days seems to be one of pessimism – a mood which I don't share. This is a very opportune time for the information world to be facing issues and creating a new and redefined niche for itself in the scheme of things.

Why should this apparently inhospitable climate be so right for a rebirth? The existence of new ideologies – competition and public/private sector liaison makes life interesting. The growth of the idea of inter relationships between organisations of all kinds is expressed in the LISC proposal for library and information plans and opens the door to a variety of new approaches. Today a myriad of organisations in the public or private sector are our potential partners if we are willing to join with them. The recently published report – *Joint Enterprises – roles and relationships of the public and private sectors in the provision of library and information services* – which resulted from a working party appointed jointly by the Library and Information Services Council and the British Library, points out the need for better exploitation of information through joint ventures, for the opening up of new markets and for interaction which will stimulate the development of the information industry.

Such change does not depend on money alone and it is certainly not simply introducing new technology. Attitudes and commitment contribute too. Once the plunge has been taken into new territory there is no doubt that the experience is refreshing. This has certainly been so as far as one example used in the Joint Enterprise report is concerned. Devon Books is a unique publishing company which was set up some three years ago by the county council and a consortium of local firms, a printer, a publisher and a marketer.

Local authority held information, statutory, technical and popular was seen by the libraries and information service as a basis for a mini business proposition which could be potentially self supporting in the longer term, with financially counterbalancing 'winners' and 'losers'.

Again research funding was acquired to explore the concept since the essential expertise was not available within the authority. Through the initial research project our eventual private sector partners were identified. Three years later, some 30 books have been published on a fully commercial basis and the publishing programme for the next 12 months involves a further 25 titles. The exercise has been a stimulating learning experience on both sides. Every situation faced has been new and the coming together of two entirely different worlds, each with their own ethos, has required a willingness on both sides to hassle things through. Combining the commercial aims of the private sector with the dissemination aims of the local authority is not easy, but it has proved to be challenging and rewarding. Perhaps the most encouraging aspect has been the way in which the venture has created its own momentum. Once the imprint became known the flow of information to the publishers, not only from within the authority but from the community, has been impressive. Jobs have been created not only within the consortium but also local printing presses have been kept supplied with a flow of work – information previously lying idle has been put to work for the benefit of all concerned. For the local authority staff involved it has been an exhilarating experience – the more so because of the general climate of containment surrounding most local government authorities these days.

So perhaps a significant reason why the time is ripe for change is the fact that today there are no sure solutions. In a world of increasing options the way is clear for experimentation. New approaches are welcome. To hark back to the sixties, the professionals, including the information professionals, always had ready answers. Today we are less sure.

To return to the general reference service within public libraries, tradition has, I think, tended to weigh heavily. Perhaps the suggestion that public reference libraries have responded less quickly and less dynamically to the changing information scene than their counterparts in industry is the comment of one who has never worked within this particular specialism. Perhaps it is true. Large reference libraries, wherever located, are an expensive resource and they need to look to their future. It was interesting to note that in its early papers on competition the government included in its list of possibles government libraries. Bearing in mind the sheer cost of the basis resource it is difficult to envisage how this might occur. More reasonable is the notion of a core information collection maintained at public expense but supporting the activities of parasitic entrepreneurs. A small example from my authority is that of a genealogist in residence scheme. Using the archives service as a 'front' to bypass the 1964 Libraries/Museum Act, a genealogist has been found to work with library/information resources on a self-financing basis. Perhaps this points the way to the future role of the public sector in the information field. What is clear is that roles and boundaries can no longer be jealously or zealously guarded. Who provides or contributes to a particular service is less important than the service being provided. In the spirit of the audit commission in one of its recent occasional papers:

> 'The choice between providing a service directly or buying it in should be based on managements assessment of which route will deliver the most cost competitive service in the long run'.

There are a number of overall strategies which could be adopted in the future:

maintain the status quo
compete
collaborate

Common sense suggests the last option – co-ordination and collaboration. In developing this style and in turning away from insularity perhaps the information manager needs to remember that it will be important to consider not only contractual arrangements with other information organisations but also ways of strengthening links within various segments of the profession, perhaps particularly with children and education. The new GCSE approach has enormous implications for information skills training and thereby for the information skill at the disposal of commerce and industry in the future. Nowhere is our responsibility to change perhaps greater than in this tenuous but important bridge.

Whatever we think about change, it doesn't make sense to resist it. Whatever our views on President Reagan, perhaps if his well-known catch phrase were to be applied to the world of information management, it would have more than a grain of truth in it: 'You ain't seen anything yet'.

Director's report on Aslib

Dennis A Lewis

Director, Association for Information Management (Aslib)

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

In 1986 Aslib's development plan was implemented and by the end of the year the benefits were being clearly seen. We invested heavily in developing and launching new products and services in our three primary areas: membership services, professional development and publications. Additionally, we have maintained the impetus in raising Aslib's profile and have made considerable progress in developing our corporate image.

The Information Resources Centre, which came into being on 1 January 1986, now offers a much sharper and more professional advisory service, free to Aslib members. During the first year of operation nearly 3,000 enquiries were answered, of which, it is interesting to note, some 20 per cent were for non-members.

The seminars programme, aimed at providing essential expertise and knowledge to practitioners and managers in the library and information resources (LIR) profession, was expanded. In particular, we introduced the Aslib Information Management Forum (AIMF), which meets the special needs of managers who are responsible for substantial information resources.

We published 13 new books, including two substantial directories. In conjunction with commercial partners we developed the new ***Index to Theses with Abstracts***, which now appears quarterly and contains for the first time the full text of the theses' abstracts. The year saw the phasing out of the research function at Aslib, with a reduction to two professional staff, John Martyn and Margaret Slater, who over the years have made a significant and unique contribution to Aslib's research. This was a continuation of an established process whereby the resources made available to us by the British Library Research and Development Department had been successively reduced over the previous five-six years. Although they were with us in Information House for most of the year, they moved out to other premises, owned by the Polytechnic of Central London, in December.

Financial and other support was made available by Aslib to our residual three consultants, so that they could establish their new, independent business, The Information Partnership, which came into being on 1 January. They, too, moved out in December, having successfully established themselves in the marketplace.

Aslib is a membership organisation and, although the income derived

Aslib Proceedings, 39 (7/8), July/August 1987, p.225–230. Printed in Great Britain

from membership subscriptions amounts to only about a quarter of our total income, the provision and sale of products and services to our members comprises a substantial percentage of our revenue. The degree of satisfaction of our current members, and the attractiveness of the organisation to new members, is reflected in membership numbers. It is pleasing to report, therefore, that for the fourth year in succession – and following 16 years of declining membership – the net number of members showed a small but significant increase.

During the year, we made important improvements to our accommodation at Information House. In addition to high-quality office space for our staff, we have:

- a fully-equipped training centre
- a seminar room
- a committee room
- a specialist library
- an information centre
- a well-equipped print room.

The training centre, seminar room and committee room are all available for hire, and were let during the year to several well-known companies in the UK information industry, including Derwent, Datasolve and Pergamon InfoLine. Such contacts reinforce the already cordial relationships which we enjoy with commercial enterprises within the information industry. Our staff establishment, at 36, remained constant in 1986 and is due to be increased slightly in 1987. It is a pleasure to record my appreciation of the continued commitment of our staff to the enterprise, particularly at a time of substantial and continuing change.

I believe that 1986 was a year of significant transition for Aslib – a final shift to a new, more market and business oriented association, very much geared to the satisfaction of its members' needs. That transition will continue in 1987 but, in order to a plan our future more effectively, my management team drew up the business strategy for the period 1986–1990, and this was accepted by Council in November 1986. It is an 'evaluated risk strategy' which acknowledges that new products will evolve from our current range of activities, aimed at our existing markets or at markets which are fairly closely related to our current mainstream activity. Two key elements in this strategy are growth and innovation. Growth – real growth, over and above that realised by the generation of inflated money – must be realised in order to achieve significant turnover and increased surpluses which may then be invested in new products and services which provide improved membership benefits. Innovation, leading to the creation of new types of products and services, is essential if we are to maintain our 'market share' in an increasingly competitive environment.

Aslib's business strategy for the period up to 1990 is, therefore, based on the following:

- continuing to run the organisation as a business, based upon sound managerial practices

- developing as a national and international centre of information and advice in the evolving discipline of information management
- developing and exploiting our membership knowledge-base
- developing effective information and advice services to help analyse and solve problems of members and (at a price) non-members
- developing a range of high added-value products and services in the information management field
- identifying and meeting the specific needs of our customers and appropriate sectors of the information industry
- continuing to represent the views of our members on those matters which are of concern to the information profession as a whole, and exercising our influence on such issues.

Professional affairs

The involvement of Aslib in professional affairs continued throughout 1986 at a high level. Through the professionalism and commitment of many of its members, Aslib is represented on a substantial number of committees and other valuable bodies such as the British Standards Institution. We also put forward names of appropriate members for consideration as candidates for selection as individuals in their own right onto bodies such as the British Library Advisory Council (BLAC) and the Library and Information Services Council (LISC), which advise the British Library Board and the Minister for Arts and Libraries respectively.

Copyright

Once again, throughout the first half of 1986 at least, the most contentious issue was that of photocopying and copyright. The White Paper *Intellectual Property and Innovation* (Cmnd 9712. 1986) belatedly appeared in April. The main features which were of immediate concern to our members were that 'fair dealing' was to be maintained, but that organisations involved in 'research for commercial purposes' were to be excluded from the fair dealing provisions. The latter is clearly untenable and unacceptable to many of our members and gave rise to considerable dismay.

In the event, the bill did not get a mention in the Queen's Speech in November, and so consequently it is anticipated that no bill will be forthcoming in the present Parliament. At least this does give us time to see if agreement can be reached with the copyright owners on this important issue.

In 1986 we have had discussions and other interactions with many organisations in the information field:

British Council
British Institute of Management
British Library

Confederation of British Industry (CBI)
Confederation of Information Communication Industries (CICI)
Department of Trade and Industry (DTI)
Hertfordshire Technical Information Service (HERTIS)
Institute of Information Scientists (IIS)
Library Association
Library and Information Services Council (LISC)
UK Online User Group
Information Industries Association (IIA) USA
National Federation of Abstracting & Information Services (NFAIS) USA
Western European Round Table on Information & Documentation (WERTID)

Library and information resource for the profession
The library and information resources profession in the UK lacks a truly effective, comprehensive library and information resource of its own. The Library Association has a library, funded entirely by the British Library at an annual cost (1985) of £370,000 to the British taxpayer. The Polytechnic of Central London houses the Library Technology Centre, also funded by the British Library, and Aslib now has its Information Resources Centre. I suggested in June that the three centres might be rationalised so that all unnecessary duplication might be eliminated, common services and policies established and a degree of co-ordination achieved. This would at the same time reduce the financial burden on the British Library (and on Aslib through a possible subvention) and provide a modern, sharp and effective resource for the profession. It is to be hoped that this Aslib initiative will bear fruit in 1987.

Confederation of Information Communication Industries (CICI)
An 'umbrella organisation' for the UK information industry was suggested in the ITAP (Information Technology Advisory Panel) report in 1983 and, as a result, the Confederation of Information Communication Industries was established in October 1984. This broad-based organisation comprises some 70 associations and other bodies across a wide spectrum of interests (libraries, information services, telecommunications, broadcasting, publishing, etc) and its main objective is to identify issues of common concern and to help to develop the UK 'information industry'. To that end its task is to influence government, and good relationships have been established with relevant sections of the DTI and other government departments. Information management interests on the CICI Board are represented by Mr Kenneth Cooper (Chief Executive of the British Library) and myself. This provides another example of the way in which Aslib is broadening its base and is becoming increasingly influential in the

rapidly developing information industry in the UK. The British Library published its corporate plan late in 1985 and this was welcomed by us as being worthy of support and encouragement, on the basis that a strong British Library is an asset to the Library and Information Resources profession as a whole.

International

On the international scene, two meetings with a Chinese delegation to the UK in December opened the way to exchange membership agreements with three representative bodies in China, and to an invitation to myself as Director to visit China in the autumn of 1987.

Under the auspices of the British Council, I visited six cities in India in November, and established good relationships with a number of professional bodies and institutions. I also had discussions about establishing an exclusive agency for Aslib publications in India, where undoubtedly there is a high sales potential.

The agency agreement for Australasia was finalised with D A Books in March 1986, following my visit to Melbourne in September 1985.

Joint Consultative Committee (JCC)

The Joint Consultative Committee is the forum at which the views of the five constituent bodies may be exchanged and from which they may be transmitted. The full JCC meets infrequently, but the executive officers get together informally every two months, and this provides valuable opportunities for exchanging information, opinions and advice which is a positive factor in the generally good relationships which we enjoy with our sister organisations. Late in 1986 'the five' was increased to 'the six' by the acceptance of an application to join the JCC by COPOL – the Council of Polytechnic Librarians.

Public sector/private sector

The relationship and essential tensions between the 'private sector' and the 'public sector' were a constant feature of much of the thinking and of many of the events in our area of professional interest. Not surprisingly, this reflects accurately the general, national and indeed worldwide debate on how the two sectors interact, affecting as they do all the significant sections of every society, and the provision of goods and services in the marketplace. In our sector, LISC made a significant contribution to the debate through its 'progress through planning and partnership' initiative arising from its 'future development in libraries' work, and through its PUPLIS working party report which examined the optimum relationships to be achieved in the provision of library and information services, between the public and private sectors. Aslib offered input to both these studies, although again we were disappointed at having our offer of nominating real, live information managers to represent the employers' viewpoint, rejected.

Transbinary Review Group

The long-awaited report from the Transbinary Review Group on the teaching of librarianship and information studies duly appeared in July and was in itself a disappointment so far as Aslib was concerned, making little if any practical recommendation in the area of training (as opposed to education), other than to set up yet another co-ordinating committee.

Acknowledgements

I would like to record my appreciation of the considerable hard work and effort put in by Aslib members who have been elected to Council, and also those who were subsequently 'allocated' or who volunteered to serve on our executive committee and our two advisory committees, and on our editorial boards. Our President, Lord Ezra, has given freely of his valuable time, and we have benefited greatly from his considerable experience and wisdom.

Finally, may I thank all our loyal members who have continued to support Aslib during the recent times of tremendous change. Such loyalty deserves reward and I am confident that, by providing effective goods and services and, by being available when required, Aslib, through its management team and its staff, gives, and will continue to give, the members what they want.

INFORMATION MANAGEMENT
FROM STRATEGIES TO ACTION

Edited by Blaise Cronin

NOW AVAILABLE FROM ASLIB PUBLICATIONS

A major new book which traces the current developments in information handling in the UK.

Eleven experts from diverse fields of information management have produced this thought-provoking collection of essays which together analyse both the theory and the application of this emerging discipline.

An invaluable guide for practising information managers and students alike.

Available now at £19 — or just £15 to members of Aslib. Complete and mail the form on this page to:

Aslib Publications (Sales)
Information House
26-27 Boswell Street
London WC1N 3JZ

If you prefer, simply telephone 01-430 2671, ext 244 to reserve your copy.

ISBN 0-85142-193-8

ORDER FORM

Please send me .. .. copies of
INFORMATION MANAGEMENT:
From strategies to action
I am/am not a member of Aslib
Name . ...
Organisation ....
Address . ...
I enclose a cheque for £... ... (£19 per copy, £15 to members of Aslib)
OR Please invoice me

Aslib

COMPUTERS & COMMUNICATIONS

What are the implications for business of the convergence of computer and communications systems?

What are the business opportunities of the future?

What are the likely developments in hardware, software, personnel requirements?

Where can you find the answers to these questions?

A major new report and analysis that no-one in business can afford to ignore.

To: Aslib, Information House, 26/27 Boswell Street, London WC1N 3JZ
Please send me full details of **Computers and Communications.**

Name ....

Organisation ....

Address...

....

THE ESSENTIAL RESEARCH TOOL

INDEX TO THESES

WITH ABSTRACTS

The authoritative and comprehensive bibliography of all 10,000 theses accepted for higher degrees by the universities of Great Britain and Ireland, and the Council for National Academic Awards.

- **FULL COMPREHENSIVE ABSTRACTS** offering an incisive summary of the content
- **AN ENHANCED SUBJECT INDEX** guides you quickly to relevant theses
- **TEN TIMES MORE INFORMATION EVERY QUARTER** allowing you to research with precision and efficiency

Every thesis entry includes a subject classification, abstract number, thesis title, author, university, degree, year, document delivery ordering number and NOW INCLUDES A COMPREHENSIVE ABSTRACT.

NOW EXPANDED AND IMPROVED

Aslib

INDEX TO THESES WITH ABSTRACTS

☐ Yes please, I would like to subscribe to **INDEX TO THESES WITH ABSTRACTS** for one year. **£140** ☐ Payment enclosed ☐ Please invoice me
(Cheques made payable to Aslib)

☐ Yes please, I would like more information on **INDEX TO THESES WITH ABSTRACTS.**

Name ____________________ Department ____________________
Organisation ____________________
Address ____________________
____
Postcode ____________________ Country ____________________
Signature ____________________

Expert Information Ltd, Woodside, Hinksey Hill, Oxford OX1 5AU, England Tel Oxford (0865) 730275
Aslib, Information House, 26-27 Boswell Street, London WC1N 3JZ Tel 01 430 2671

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

26 JAN 1989

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

**Professional
Recruitment
Limited**

Aslib PROCEEDINGS

Volume 39 Number 9 September 1987

Marketing the library 231
Roy Smith

Management development for information professionals of the future 235
Lynne Brindley

Effective in-company communication – a case study 245
Penny Telling

Implementing the information audit 255
David R. Worlock

Breaking free: survival and growth in a commercial climate 261
David Rigglesford

The impact of information management on corporate cultures 267
Forest Woody Horton, Jr.

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **SEPTEMBER 1987** **Number 9**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G)

© 1987 Aslib and contributors

ISSN 0001 253X

Marketing the library

Roy Smith

Central Library, London Borough of Sutton

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

I have a confession to make. I wrote a paper, *The marketing of libraries,* which turned out to be a poor man's Blaise Cronin. My sin was not to ask the elementary questions of the Aslib request for my presence – namely: 'What, when, where and why?' Had I done so I would have got to 'Why' and saved myself some hours of writing and research. Why then did Aslib ask me? The answer must be that Sutton has succeeded in crashing the normally impenetrable barrier between public and special libraries. Possibly its razzmatazz, its well-oiled publicity machine – even its maverick temerity to accept that libraries are not, and probably cannot be, 'open and free', may have struck a spark in your conference organising committee's consciousness.

So, my paper will be embellished with experiences and activities from the first and only public library to have been awarded the Library Association Robinson Medal for significant advances in marketing techniques, and is annual winner of some aspect of the Library Association T C Farries Publicity Awards – yes, it's Sutton! It is for you to accept or reject our experiences and views or, more likely, to adapt some of them to your own requirements.

In the early 1970s the senior management made the obvious but nonetheless significant decision to go all out to inform, cultivate and therefore influence the elected members of Sutton. They are the policy-makers and hold the purse strings, yet they knew very little about libraries and the arts. I formed the view that my predecessors had worked on the Will Hay principle of 'treat them rough and tell them nothing'. In contrast we have worked for 20 years at interesting and informing our Council. Every week three or four selected press releases are also relayed to members. Details of our successes are written-up in the Council newsletter. The information needs of Councillors receive high priority. Invitations to private views; publishing launches; celebrity lectures are not stinted and we always attempt to make ourselves useful. I defend myself against accusations of favouritism by asserting that *they* can influence for good or ill the distribution of resources, *they* need to know about our activities and *they* therefore deserve this kind of special attention.

Our application to the task was early rewarded when we were fortunate to get indications that Sutton Council was, at long last, seriously contem-

Aslib Proceedings, 39 (9), September 1987, p.231–233 Printed in Great Britain

plating a new Central Library. We formulated a marketing strategy that has stood the test of time:

1) Our library is 'user centred' and is organised to this end over administrative ease. Not for us separate reference and lending libraries but *subject* libraries with teams qualified professionally, academically and by experience to promote their subjects throughout the town. That is their remit — they buy and organise stock, answer questions, give advice and do the traditional work of a librarian and information officer but they also organise lectures, seminars and other live activities relating to their subject; they conceive and organise exhibitions; they write press releases; they compose advertising copy; they vie with each other to produce stimulating activities to persuade the community to use library facilities. They are so successful that we claim to be the busiest library system in London.

2) This kind of motivation and lively atmosphere has several spin offs. First, it attracts good staff from a wide variety of libraries. We have reversed the normal 'brain drain' from public libraries to other kinds of libraries and have recruited staff from special, academic and university libraries. Second, our staff tend to stay and develop a great loyalty to the underlying philosophy. Third, we have succeeded in developing hidden talents in a gratifying number of staff. My favourite success story in this respect was a 'put-upon' reference assistant, plodding away adequately but without much enthusiasm on the day-to-day routine of the reference desk. His real love was local history. Now he is a well regarded heritage officer, responsible for publishing over 30 works of local history; the developer of two magnificent historic houses; the originator of an air show to celebrate the 50th anniversary of Amy Johnson's famous flight and organiser of several influential local societies; the Croydon Airport Society, the Wandle Group, the Carew Manor Group, Friends of Whitehall, East Surrey Family History Society, to name but a few!

We spent time in the early days analysing what we had to do and how. The 1964 Public Libraries Act placed on us two particular duties 'to provide a comprehensive and efficient service' and to encourage use. The comprehensive and efficient service has been achieved by persuading a fairly hard-nosed Tory administration of that time (remember we are now one of the South West London 'progressive' Alliance League) of the value of libraries and securing, with their approval, a generous share of capital and revenue resources. The encouragement of use brought into play another distinctive organisation method which, starting from small beginnings, has grown to be a central tenet of policy. We decided to 'bring the library into the marketplace'. Not for us the off-putting image of a reserved academic backwater — although there are quiet places of study, and our subject departments serve our users in depth. Rather, we have embraced the decor of a good department store embellished with the exciting but paradoxical ordinariness of a street market. We actually use market stalls and our gallery display space is filled with a succession of ever-changing activities — art exhibitions, booksales, computer fairs, craft demonstrations, jazz concerts, music recitals, etc. We have let the space for the sale of encyclopaedias, gas stoves, showers, timeshares and holidays.

Our coffee shop is never empty and our book, jigsaw and souvenir sales produce a healthy profit and add to the spirit of the place. We attract people and we pride ourselves in catering for their needs. My staff are always searching for new and improved services, ranging from major activities like online services, compact discs and machines for hire, and videos, to small but still important adjuncts to the service such as umbrella loans (good advertising); the Domesday Discs; facilities for nursing mothers etc. You can buy a ticket for a show; hire a typewriter or a market stall; consult a book or periodical or listen to records and cassettes. We are in the world of communicating in ways suiting our public.

This all needs publicising and selling. in an area where the stereotyped, introverted, intellectually superior library staff, it is alleged, will fail. Don't you believe it. My staff are brilliant at marketing. Press releases are sent out by the dozen; a 12/16 page bi-monthly *What's On,* with stories, pictures and promotional gimmicks. Talks to some kind of local society are a weekly occurence. Posters advertising our activities are everywhere. Our relationship with the press is a busy strand of our marketing plan. We are blessed with four very good series of local newspapers and we certainly cultivate them. We know where their staff drink, and their particular fancies, and we trust them to do a good reporting job. Consequently, we are rarely out of the headlines — for the nicest of reasons.

We excel ourselves from time-to-time. One of our best stunts was to so publicise *The First Writer in Residence in a Library Anywhere in the World* that the story made such august newspapers as *The Independance Journal* and the *Woga Woga Times*; the *South China Morning Post* and the *Calgary Herald.* We never decline an opportunity to blow our own trumpet — and why not? We are confident of the value of our services — we wish to proselytise whenever we can.

Some of you may be thinking that what I have said is a far cry from the world of the professional librarian and information worker. If so, you are wrong and it is only by using and adapting such devices to one's own library environment that you will achieve the recognition needed from your masters, and gain the resources you require in order to achieve maximum service. Whether you are Peter Hall directing the National Theatre; a Henry Wrong running the Barbican or Roy Smith promoting Sutton Libraries you will only succeed by persuasion, flair and constant application to the business of *marketing.* It matters not that the prime activities are different. All will be applying techniques to secure resources, enjoy public recognition and thus get their facilities used. That, colleagues, is the name of the game.

NEW

Primary mapping source and research tool

World Mapping Today

R B Parry and C R Perkins

World Mapping Today is *the* primary reference source and research tool for professionals concerned with maps and mapping It is a unique combination of text, graphic indexes, cartobibliography and source information in one easy-to-use volume Included are listings of current topographic and resource mapping arranged alphabetically country by country (with additional sections on the oceans and polar areas) and the organization of mapping activities in each country

1987 624 pages approx 297 × 210 mm 0 408 02850 5 Hardcover Illustrated £125 00 approx

For further information, please contact **Geraldine Hills, Butterworth Scientific Ltd, PO Box 63, Guildford, Surrey GU2 5BH, UK**

Butterworths

Management development for information professionals of the future

Lynne Brindley
Aston University

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

This simple title, *Management development for information professionals of the future*, hides within it a large number of difficult issues. I want firstly to make explicit some of my assumptions about the future as a background to addressing the question of what sort of systematic and continuing preparation information professionals will need to play the kind of central role envisaged for them by bodies such as Aslib. I hope to encapsulate the challenge and opportunities of the next few years as a speculative context, without going into too much detail. This will lead on to an identification of the key requirements and possible ways of meeting needs, with some final thoughts on our capacity as a profession to meet these complex challenges.

During the 1960s and 1970s, it was rare for the value of existing services to be questioned. Growth of collections was the overriding goal, and size was equated with excellence. Ideas for new services were usually matched by additional resources and reappraisal of need and cost benefit analysis were decidedly not part of the picture. This era of heady growth is, I suspect, nostalgically remembered by many of us who have since had to grapple with increasing pressure on budgets and a much less favourable climate for libraries and information services in all sectors.

During the late 1970s and the 1980s increased pressure on libraries brought managerial skills to the fore. In 1976 a Library Association working party investigating management training for librarians claimed that 'the environment is now too turbulent for semi-skilled managers to handle safely'(1). Today we see a profession which at all levels is showing differing capacity and willingness to recognise the enormity of these pressures and the finality of this shift, resulting in attitudes sometimes more defensive and threatened than open and ready to respond to new, perhaps less conventional opportunities. As we look further into the future the most challenging opportunities are increasingly likely to be the unusual ones, away from what are now regarded as mainstream avenues of employment. It will be the age both of the professional polymath and the professional specialist. But that is where management development comes in.

Aslib Proceedings, 39 (9), September 1987, p 235–243 Printed in Great Britain

Context of change

The context of change is an uncertain future, a period of unprecedented speed of change and the consequent need for rapid adjustment. There are already examples of the loss of the focal position which libraries held de facto in the supply of published literature, as a range of professionals lay claim to an information responsibility. The environment in which libraries function is changing radically and will become more and more differentiated in future.

Much of this change can be ascribed to developments in the potential and use of information technology with far-reaching consequences for the information professional. We are witnessing the development of systems that are becoming easier to use, applications software packages with greater functionality and flexibility, and hardware improvements bringing more processing power to users. These advances will continue and bring to users many more choices. As end-users become more sophisticated and technology more complex, there will be more demand for fifth generation computing, incorporating artificial intelligence, and using natural language in its problem solving. In a recent lecture, Professor Feigenbaum described his library of the future, at the far side of his dreams, some 50 years hence, when we will not be able to imagine a time when we 'used to have books that didn't talk to each other'. His vision has an electronic library as an active, intelligent knowledge server interacting within a network of knowledge systems(2).

As electronic databases and databanks have proliferated, the speed of information communication has also increased sharply. Electronic communication of text, voice, and images will increasingly offer the user a range of information delivery and distribution options – fibre optics, satellites, microwave, cable and local area networks all have implications for library and information services of the future. Laser optical storage and retrieval technology and optical videodisc technology are all likely to be major contributors to a reshaping of information systems and information transfer and provision.

Perhaps even more important than these individual developments in the long-term will be the implications for the relationships between the creators of material, publishers, librarians and users with regard to issues such as storage, copyright and the nature and cost of service provision. Of course, we have been writing and reading about the breakdown of the traditional publications chain but how far are we professionally informed and aware of the implications – for example, of the *Knowledge Warehouse* project, of the implications of recent *Adonis* developments? How far will we, as information professionals, be ready to contribute to and participate in the emerging IT based job market, and as knowledge workers not only in traditional fields but in the network of knowledge systems of Feigenbaum's future?

Besides being important in their own right, information technology developments are stimulating and reinforcing other changes in the environment for future information workers. IT is bringing with it a freedom of choice to end-users. In universities, academics will be able to return conceptually to their own private library, at least as an enhanced first resort, and an electronic one accessed through their desktop workstations. At Brown University, MIT and Carnegie-Mellon, millions of dollars are being spent on the development of 'scholar workstations' which will perform a range of information processing, retrieval, assimilation and publishing tasks. Changes in IT are facilitating a shift from centralised to smaller, more effective units of service, the delivery of information direct to the user at home, in the office or in the classroom.

It is significantly changing the balance between public and private sector roles in the information industry. There is already a breakdown of the library monopoly, with a burgeoning private sector involvement in the profitable sectors of electronic information services, and a mixed economy of public and private sector agents, not yet in my view with sufficient mutual respect for each others' talents. With the information business come, of course, questions of charging for services and the comfortable position of the library as a valued overhead service rather than competing on the basis of market oriented, demand led services has already been much eroded. The related shift from doing, to buying in, also changes the library manager's skill requirements, and will bring the handling of contracts, quality control standards and even franchise arrangements to the fore.

Not only charging for information but also the politics of information as a resource in society become more central as electronic information and its internationalisation through technology grows and is increasingly counterbalanced by national protectionism of industry. How will the UK cope in the 1990s in a quite reasonable scenario of the country sinking to fourth tier status as an industrial nation, few indigenous information suppliers, and fewer in work to support an ageing population? For those with talent and initiative this environment will provide new opportunities, probably seized now more in the industrial than in the academic environment, for an expansion of role when an existing information service extends its functions to encompass the management of all information resources within an institution; for boundary spanning roles as multi-disciplinary teams are required to approach complex information problems; for new forms of information-related work in entrepreneurial settings, as information broker or consultant and more frequently as 'one-man bands'.

The wider information management role, the organisation of a company's total intelligence system is well known to this audience and requires a range of technology, political and personal skills to achieve, frequently in competiton with other claimants to this role. Information technology also creates boundary spanning roles. The notion of professional convergence with our computing colleagues is now being well aired and, in a few cases, practised. There are complex links to maintain with external database vendors and those in the book and publishing world. The changing managerial skills requirement is not insignificant as one moves from autonomous control over the library operation into a loose confederation of service suppliers, where co-operation and co-ordination are more relevant than the traditional competitive and sectoral interests so characteristic of traditional departmental management. Co-operative public/private sector ventures are likely to be more prevalent, again bringing different skill requirements to the fore.

It is perhaps in this third area of loosely-defined, information-related work, frequently in IT-based settings, that there is the biggest challenge for future information professionals. This will often be a lonely road of self-employment or as a single professional providing information service to specialist groups. Self-sufficiency, the possession of a wide range of skills and a good informal network of backup contacts will be required for survival and success. These requirements will pose particular problems for professional and managerial development. On the one hand, there is pressure for the development of a generic core curriculum for the profession. On the other hand these professionals will frequently be required to cope single-handed, from their first day in a job, with a range of managerial and technical problems. The need for continuing education and a programme for updating skills will be specially important and, of course, especially difficult for this new group, to counter unrealistic expectations of a basic-level professional education.

IT allows much of the production work associated with library processes to be delegated to support staff, bringing with it the opportunity for restructuring from a functional library orientation to a client or disciplinary grouping for service provision. The opportunity to move resources to the front end of service provision, to counteract the user unfriendliness of large research libraries is an opportunity created entirely by technology, commercial services and changing expectations of users, increasingly computer literate and intolerant of traditional library inconvenience. In summary, all these factors in our changing environment point towards an increasing requirement for managerial skills and attitudes far different from the traditional value systems of many librarians today.

Identification of management development needs

Within this context it is now appropriate to ask what are our management development needs for the future? Indeed, are they different from the skills we so badly need now? How much from the general body of management theory and good practice can be imported and applied in our own situation? My view is that many of the challenges we face are also faced in wider industrial and commercial settings, yet it is sometimes difficult to extrapolate by span of analogy the relevance of their management literature and experience, viz the continuing heated debate within the profession of the relevance of marketing concepts to the library.

Stepping back from specific requirements for a moment we face a future in which adaptability and flexibility will be the key. We will need to be able to cope positively with continuing change, to create our own opportunities, frequently without precedent to guide us, and develop the capacity to deal with increasing complexity of choice and decision making. Is this so different from any other managers? Drucker has a clear warning – 'if they cannot adapt to rapid change, public sector institutions will become like feudal barons around 1300'(3)

So, what are the requirements? Again, I have no intention of attempting a comprehensive list, but rather have pulled out critical areas for professional development. I am talking not specifically about technical skills but of a comprehensively different approach to the job of management, independent of the particular political climate that may pertain at any given time over the next 10 years.

I have indicated the pivotal importance of IT developments as they affect the work of the future information professional. Similarly, the development of a range of information technology skills are in my view a prerequisite for future managerial credibility. These skills range from the simple but enabling keyboarding facility, to a broad awareness of technology and its implications to ensure that sound financial investments are made and communication problems between involved parties are avoided. The longer-term importance of expert systems and the changing patterns of knowledge acquisition facilitated by IT developments also suggests a greater prominence be given to the study of the cognitive development process, patterns of communication and flow of knowledge between people, and associated philosophical and linguistic studies of the nature of knowledge.

On the managerial side there is unlikely to be any lessening of the pressure in all sectors to demonstrate efficiency, effectiveness and value for money of our services. Financial management skills are an essential part of the library manager's toolkit and comprehensive accountability for effective resource management will be a continuing requirement. Incidentally, it is information technology itself which has forced much of our resource expenditure into high visibility, and required skills in arguing the case for funding at a high level are essential. The costs of computerised information systems and the associated infrastructure and training needs, frequently shift costs and do not necessarily save them. We need to move away very rapidly from growth in input as a goal in itself and move towards a model which stresses the importance of obtaining results even within a shrinking budget. This does not, of course, excuse us professionally from continuing to argue against the overall erosion of investment in libraries and information services and its adverse effect, for example, on the quality of research support within our universities.

It may well be that this major shift in philosophy will widen the distinction between the librarian's role in support of humanities and social sciences compared with support for science, technology and business. The dichotomy between traditional library skills of collection building and maintenance, the librarian as keeper and custodian, and the librarian as information worker in partnerships of various kinds is in my view likely to grow. The notion of information budgets and financing services on a 'pay as you use' basis will increase the distinction and bring the associated need for marketing skills into even greater prominence.

It is in my view ironic that planning for purposeful change becomes more essential the less certain we are of the future. In the universities at the moment we are being showered by letters from the University Grants Committee (UGC) asking us to bid for earmarked money, in large and small pots of gold. However, a prerequisite to these bids is the production of clear institutional plans for the future, setting out priorities and related resource allocation plans. This cannot be too soon for libraries which even if they have had will to draw up their own plans, have been inhibited by the lack of a wider institutional framework. A positive attitude to planning with associated use of management science techniques is, in my view, a second essential part of the management kitbag for the information professional of the future. The increasingly complex environment requires us to develop the ability to ask better quality questions and use quantified information more systematically in answering them.

Drucker commends the development of entrepreneurial attitudes and skills in the setting of clearer goals for service institutions. In the likely continuing squeeze on resources we need to have clearer statements of what we are doing and why we are doing it, and the ability to move from maximisation goals linked to the public sector philosophy to optimisation goals, based on a more realistic appreciation of the likely future resources for libraries from the public purse. By making this statement I do not condone under-investment but propose a strategy for positive coping. This is a context for freeing thinking and encouraging more imagination and experiment in relation to service provision with or without involvement of the private sector suggested by the recent LISC/British Library report on joint public and private sector enterprises(4).

Political skills, both of persuasion and presentation, are closely linked with the clearer articulation of strategy and the credibility of the information professional to take on a wider involvement in institutional decision-making. Communication skills at all levels become even more important to sell and present library and information services to a range of audiences, through informal contacts, committees, projects, interviews and public gatherings.

A third major area of management development centres in my view around the theme of sensitivity to user needs. Very few libraries are so far user oriented, yet they vociferously claim to be, and in this there are many lessons to be imported from the 'excellence' family of management literature(5,6). The very fact that I have used the word 'user' rather than customer or client is indicative of the problem. In future years, as information technology changes the way in which our customers work, we will need to give a much higher priority to spending time with different user populations to understand how they obtain information, how it fits with their changing work routines, and modify our service patterns around their information usage. A particularly pertinent study is currently under way at UCLA, to create a strategic plan for information in the research university for the 1990s(7). We will need to be more innovative in ways of serving future needs and be more prepared to evaluate, modify and drop services that may seem fundamental to our current service structures. The debate about the future of the reference service in libraries is one example of such thinking(8). Such innovation will not come without pain and conflict for which we, as managers, need better preparation, particularly as many of us have been trained and developed managerially over a period when it was thought preferable to smooth over the problems rather than tackle them head on.

Meeting management development needs

It is all too easy to see that to cope with continuing change we need to take a lifelong approach to education and training. We need to pay continuing attention to the development of individuals within our own care allowing time and money to develop their potential in a supportive structure. Yet how many of us in managerial positions feel confident enough to coach our staff in such uncertain times? At the same time we need to be recruiting the brightest and best people, with high, rigorous intellectual training, regardless of discipline. This is not always going to be synonymous with appointing professionally trained library and information staff and will become an even greater problem unless financial rewards and enhanced status match the increased complexity and importance of the future information professional's role.

I think there would be no disagreement that continuing education is of vital importance for the profession and particularly in the area of management development where the interaction of theory and experience is such an essential part of growth in competence. Aslib itself is active in the short course market and there are many offerings not aimed specifically at librarians or information workers, which will be increasingly relevant to the needs of the more diffuse professional future envisaged in this paper. Current patterns of training are not particularly well-suited to future requirements for managerial development which will need to draw on a range of course suppliers, a mix of professional and disciplinary approaches and methods of delivery, themselves influenced by IT with its likely emphasis on distance learning. Meeting the needs of the single, entrepreneurial professional will be at least as important as provision for those working in more structured environments.

I am also attracted to the concept of the management intern program of the Council for Library Resources in North America. Within this programme some 35 promising professionals, typically with five or more years of experience, are supported for a year away from their own institutions while they work as management interns under the direct tutelage of distinguished library directors. It is seen as an effective, if expensive way of producing 'total immersion' in the management process. A similar programme is run in the specialist area of Health Sciences Libraries, and linked with the National Library of Medicine(9). It is not difficult to imagine the value of something similar in the UK although we may well be more diffident about such a form of succession planning.

Perhaps the biggest challenge to meeting these needs is contained in our own attitudes and value systems. In 1975 it was written, 'today's librarian is a manager in every sense of the word yet few librarians perceive themselves as having a managerial role'(10). Over 10 years later, Cummings writes, 'At present there is less resistance from librarians to changing technology than to changing management practices'(11). It is crucially important that those of us who are in positions of influence over other professionals inculcate a forward-looking approach to future challenges. The problem is compounded by the rapid increase in the rate of change in libraries which in itself is likely to have an adverse effect on many individuals' attitudes towards change. An essential management skill will be the recognition of quite normal behavioural responses to change, such as differing levels of personal tolerance and associated stress, passive or disruptive resistance, etc, and the ability to deal with such problems.

There are some good signs. We are seeing some self-starters, outstanding young people entering the profession, but alas they are still too rare. Status and external perception of the profession frequently conflict with our view that we are key people in the information society. In general we do well in interprofessional comparisons as, for example, the Audit Commission and others have found. On campus the library is probably one of the best managed units and my recent visit to the USA indicated that librarians had a far superior reputation for service and a managerial approach to problem solving than their counterparts in computing services. However, much remains to be achieved.

Let me conclude with a quote from *A Passion for Excellence* – 'the obsessive pursuit of the customer and constant innovation mean adaptation . . . the surviving organisation is the adaptive organisation . . .', and 'even those who held the most mundane jobs were evaluated almost solely on the degree to which the person contributed innovately to the job'. Can we honestly say that it should be so very different for libraries and information professionals? Constant attention to service and our users, adaptability and innovative thinking, coupled with motivated staff are essentials, but not sufficient on their own. This approach needs underpinning with solid planning, financial control and performance control and good information-based decision making. How easily all these needs can be expressed – how large a challenge to put all this into practice.

REFERENCES

1. Anderson, U. *Management training for librarians*. Library Association, 1977.
2. Feigenbaum, Professor E.A. *The library of the future*. A guest lecture given at Aston University, November 1986.
3. Drucker, P. *Innovation and Entrepreneurship*. Heinemann, 1985.

4. *Joint enterprise; the roles and relationships of the public and private sectors in the provision of library and information services.* A joint British Library/ Library and Information Services Council report, HMSO, 1987.
5. Peters, T.J. and Waterman, R.H. *In search of excellence.* Harper & Row, 1982.
6. Peters, T.J. and Austin, N. *A passion for excellence.* Collins 1985.
7. Hayes, R.H. 'Strategic planning for information in the research university.' IFLA paper, August 1986.
8. Ford, Barbara J. *Reference beyond (and without) the reference desk. College & Research Libraries*, September 1986, 491–4.
9. Marcum, Deanna B. 'Management training for research librarianship, in Advances in Library Administration and Organisation', 2, 1–19, JAI Press, 1983.
10. Wills, G. and Oldman, C. *Developing the librarian as a manager.* MCB Books, 1975.
11. Cummings, M. M. *Economics of research libraries.* CLR 1986.

Effective in-company communications – a case study

Penny Telling
British Aerospace

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager; University of Sussex, 17–20 March 1987.

The generally accepted theory today is that a company with a well-informed workforce can reap many benefits including: greater understanding, and acceptance of, management decisions, responsiveness to change, increased flexibility, co-operation (instead of obedience), improved consultation, and a sense of shared responsibility. All this will result in increased efficiency and productivity To some, these may be just fine words, but it is clear that within an organisation the performance of people can make the difference between success and failure. A number of successful companies claim that a policy of good employee communications is one of the main factors contributing to their success. It is a fact that failures of communication can be extremely costly and many large businesses throughout the country are now adopting a more positive attitude to getting their systems of communications right. Certainly, within British Aerospace, a commitment to good employee communications forms an essential part of the management strategy and, at a number of factories around the country, priority is being given to the introduction of internal communication programmes designed to suit the individual circumstances of the particular site.

Background

Let me start by giving you some background information about the factory at Filton Bristol, where amongst other things I have overall responsibility for internal communications.

We are now part of the huge international corporation known as British Aerospace, formed as a nationalised industry in 1977 and privatised very successfully in 1981. The company employs 76,000 people and its range of high technology products include civil and military aircraft, spacecraft, guided weapons and electronic systems. It is a recognised leader in the aerospace field, involved in the design and manufacture of a greater range of aerospace products than any other company in the world.

However, our roots at Filton go back to the very earliest days of aviation. There has been an aircraft factory on the site for 77 years. During that

Aslib Proceedings, 39 (9), September 1987, p.245–25[illegible]. Printed in Great Britain

time it has produced aircraft as diverse as the Boxkite and Concorde – perhaps our most famous achievement of all. Today, we are involved in a number of major aircraft projects:

(i) The British Aerospace 146, the worlds quietest jet airliner is a medium size, short haul aircraft carrying between 70 and 100 passengers. Apart from its quietness, it is fast building a reputation for economy and passenger comfort and can also operate in and out of some of the worlds more difficult airfields. A major component for the BAe 146 – the centre fuselage – is manufactured at Filton.

(ii) Filton carry out the total maintenance task for all American F-111 aircraft operated in Britain as part of Europe's NATO defence force. This contract means that none of the F-111s now have to return to the United States during their operational life in Europe.

(iii) Britain is a full partner with Germany, France and Spain in the European plane-making consortium known as Airbus Industrie. British Aerospace design and manufacture the wings for the Airbus aircraft and Filton is responsible for the final assembly and equipping of the wings for the newest member of the Airbus family, the A320. The 150 seat A320 recently made its maiden flight and has already attracted nearly 450 orders and options. As well as its major design and manufacturing role, Filton is the lead site within British Aerospace on Airbus matters, having design and project responsibility for the overall British involvement in the Airbus Industrie consortium.

The site at Bristol employs nearly 5,500 people and, fortunately in these difficult days, we are actually expanding, looking to recruit several hundred more skilled workers during this year. We employ large numbers of subcontract staff, both on design and manufacture, and this number is also expected to increase this year.

The nature of our business

The aircraft business is high risk and requires long-term investment. You need to commit large sums of money years before any return can be expected. It is a high technology business where quality is of paramount importance. It is also a very competitive business, where you need a high quality, technically excellent product, but produced at the right price. The civil aircraft market is a particularly difficult one, largely dominated by the Americans and Boeing in particular. In recent years, there has not been enough scope in the market for everyone and this has given the aircraft industry in Europe some very hard times. Finally, it is a labour intensive industry where you require a certain distribution of skills to produce the goods. It is not a business which lends itself to automation on a large-scale like, for example, the motor industry.

You need a variety of skills to provide the nucleus of an aircraft building team. You need designers with the skill and imagination to conceive new ideas, and design draughtsmen to put those ideas on paper in meticulous detail. (Nowadays of course this is increasingly done using computers, but in no way does this reduce the skill required.) You also need aerodynamicists and other professional engineers to evaluate the design, making sure that it will work, and be safe and cost-effective. Test engineers and technicians are required to put each prototype through its paces and skilled craftsmen to turn all that into the reality of a production line. In addition, you need a small army of support staff to market the product, balance the books, negotiate the contracts and organise the facilities. It all comes down to *people* in the end.

The difficult years

Apart from the general trends towards a more modern management style, what specifically prompted British Aerospace at Filton to adopt a different policy in respect of internal communications?

In the late 1960s and early 1970s, Filton was an equal partner in the Anglo/French consortium producing what was probably the most glamorous civil aircraft of all time – Concorde. By its very nature, Concorde was at the forefront of technology, the first of its kind in the world. The product identity achieved by such a project was very strong. Although Concorde has since proved to be a technical triumph, it was sadly not a commercial success and, when production of the planned number of aircraft came to an end in the mid 1970s, Filton slumped.

The years that followed saw two major redundancies and a steady decline in the workforce. There was not enough work for those who were left and the senior management of the day had only one priority – to get enough work for Filton to survive. Survival might be the strongest motivation of all, but, when the battle is over, you can be left with a demoralised and very insecure body of people.

We went from the single project days of Concorde, where complete Filton-built aircaft could be seen flying in and out of the factory, to a collection of bits and pieces largely begged from other parts of the company designed simply to fill in and buy us time.

Although the work situation improved dramatically in the early 1980s, there were still serious morale problems stemming from these difficult years. This was made clear to the senior management in two ways during early 1984: first, British Aerospace at corporate level had commissioned MORI to conduct an employee opinion survey and, perhaps not surprisingly, Filton emerged at the bottom of the league table. Second, and more dramatic, was our first serious industrial dispute in nine years. We suffered a very damaging nine week strike by the manual workers during the summer of 1984 which, although superficially about pay, clearly indicated that we had a real problem in terms of communication and mutual trust between the management and the workforce. In short, we had arrived at the classic 'them and us' confrontation.

The way forward

At about the same time, Filton had become part of the newly formed Civil Aircraft Division of British Aerospace and a new Site Director was appointed. His first reaction was to question what had been at the root of the strike and what could be done to make sure it never happened again. Communications were suddenly in the limelight as one area where some positive action was urgently required. Early in 1985, I was charged with the task of improving internal communications on site and not to be too long about it.

How do you define good communications? In a working environment, the ideal situation is for *all* employees to receive *all* the information that is relevant to them in their work and that management in return receive *all* the available feedback. The first thing to realise is that you will never devise a perfect system. The best you can do is to organise your information, decide what is important to you and what your workforce will regard as important, and what kind of feedback you are seeking. Then you try to devise a workable system for distributing and receiving that information.

Employee communications can be divided into three main categories:

- communications by mass methods
- communications through line management
- communication through trade unions

At this stage, my brief did not include the improvements obviously required in the relationship with the trade unions on site. This was to be tackled separately. I thought I had better start by looking at what we were already doing, if anything. Then, hopefully, I could set about identifying what improvements could be introduced. I did find a few areas where we performed quite well, but in general I was fairly depressed. The main weaknesses I found were:

(i) there was no regular communication down through line management to staff. Even in areas where regular communications meetings were held, these stopped at first line management level. No one was talking to the grass roots;

(ii) as a result, there was over emphasis on union representation as a vehicle for communicating information. This was not only accepted by the workforce but also by some management. In general, middle management were not seen as leaders or decision makers;

(iii) on the rare occasions when special messages were cascaded down the line, these were always negative. For example, we had to cut back manning levels, or budgets or improve timekeeping etc;

(iv) there was no formal system of upward communication other than through the unions;

(v) there was general lack of visibility around the site of senior managers and executives, often within their own organisation;

(vi) people were generally not aware of the activities of other parts of the factory. This resulted in very parochial attitudes and militated against an overall sense of team spirit.

The next step was to look at the options available to us and I talked at length to a number of outside companies, as well as other British Aerospace sites. I also sought advice from organisations like the CBI and the Industrial Society. By May 1985, having looked at all the options, I was ready to make my recommendations. They were not particularly earth shattering, but I still felt that, as part of my presentation to my management committee, I should make a number of cautionary points:

(i) senior management, especially at director level, must be committed to the new strategy and must be seen to be giving it their full support. A number of executives and managers would not be convinced of the need for change and only the wholehearted support of top management would overcome their resistance;
(ii) we could not expect to quantify the results of any changes we may introduce – certainly not in the short term. It would be several years before any tangible evidence of the benefits of the new system emerged;
(iii) once committed, we must stay with it. It would be disastrous to publicly embark on a system of open, two-way communication and then to retreat from it, if and when circumstances changed or the going got rough;
(iv) any system is bound to involve some cost. My recommendations did not involve any major capital investment or cash outlay, but there would inevitably be costs associated with manhours, training and maybe some additional manning required;
(v) there was an element of risk which had to be accepted. For example, to encourage two-way communication could result in penetrating questions which will have to be answered; good performance/progress reports could encourage more persistent pay bargaining etc;
(vi) above all, whatever we did, it had to be done well. It would be better to do nothing, than to be half-hearted or superficial.

In spite of all this, I was gratified to be given an unconditional go-ahead by the management committee and was assured of their commitment to the implementation of the new plan.

The techniques

Overall, I felt that we should concentrate our efforts on strengthening the role of management and restoring them as a credible source of information. Once we had achieved this, then it would be possible to consider some of the more progressive techniques, but I felt this foundation was essential before we went any further. The main thrust of the new programme, therefore, was to be the introduction of team briefing, a system of communication through line management which has been successfully introduced in a number of companies, notably Thorn EMI, BP, British Telecom and Jaguar. Team briefing is a system of face-to-face, two-way communication which covers the whole workforce. Briefings are carried out regularly according to a laid down structure by nominated supervisors covering the team of people immediately responsible to them, usually in groups of not more than 15. The content of the briefing consists of a core message containing two or three items of general interest prepared by top management which is augmented by local material as it cascades down the line. Normally negotiable items like pay and conditions are not discussed and briefings are centred around performance, progress and matters of general policy with a strong local bias. Questions on the material being briefed are encouraged and answers are always forthcoming. The target time for each briefing is half an hour although this is sometimes difficult to achieve and the whole briefing cascade should be completed within a week, sooner if possible. To set up the system in an organisation as large and diverse as Filton, I started by requesting that each directorate appointed a briefing co-ordinator. These co-ordinators were responsible for devising briefing structures for their particular functions and nominating the appropriate briefers and deputies. The structures had to be to a common format across the factory so that briefings of different categories of staff could be synchronised, thus avoiding the possibility that a clerk in one area would obtain the information significantly ahead of a manager in another. As soon as briefers and deputies were nominated, nearly 600 of them in total, we set about the task of training them in the techniques of team briefing. This was done with the help of the Industrial Society and the whole exercise was completed within ten weeks. During those weeks I was busy preparing a policy document which would be issued to all briefers and setting up a calendar of briefing dates for the next 12 months, all timed for a shot-gun start in January 1986.

Turning to the mass methods side, a number of other improvements were introduced:

(i) one of the first things we did was to carry out a survey of the 55 official noticeboards on site. As a result an exercise was carried out to rationalise our whole approach to notice boards. Starting from scratch, we identified where official boards should be located and erected new ones to a common standard throughout the factory. The method of circulating notices was improved, a custodian was appointed to be responsible for each board and a new policy document on noticeboard management was issued;

(ii) our previous house magazine was scrapped and replaced with a new monthly magazine, *Filton News*. Its content was to be a balance of product news and management information with a scattering of social and employee related stories to make it more enjoyable. To encourage feedback, the magazine was to have a letters page and in its early stages would run a number of competitions on various subjects to stimulate interest. The first issue of the new magazine came out in October 1985;

(iii) the old Filton suggestion scheme was completely revamped. The rules were changed and a new awards structure introduced to allow for much larger awards calculated on a savings related basis. A full-time co-ordinator was appointed to administer the scheme and a competition to find a scheme logo was one of the first to appear in the new *Filton News*. The paperwork was then redesigned and the launch of the new scheme, in January 1986, was given maximum publicity around the site;

(iv) one additional method we have tried, which was not part of the original recommendations, has been a 'state-of-the-nation' address by the senior site director. We have done two of these so far, both on video. The second one, which outlined the business plan and objectives for 1987, was accompanied by a glossy brochure handed out to each employee in the audience. The videos were shown to all employees in groups of about 250 and each showing was hosted by two directors with a question and answer session afterwards. Both the videos and the handout appear to have been very well received and this has now become a permanent feature of our communications programme;

(v) in addition to all of this, we planned a number of special exercises aimed at increasing the employees awareness of the company's business and improving the sense of product identity. These special exercises included: a combination video specially prepared for employees to take home on free loan; the re-introduction of open days at the factory and the familiarisation visits to other British Aerospace sites and to Airbus Industrie headquarters in Toulouse. We also obtained large numbers of tickets for the 1986 Farnborough show for allocation to employees and arranged for the sale of specially designed items such as ties, tee shirts and Christmas cards.

What have we achieved?

We are now a year on and the obvious question is – what, if anything, have we achieved so far? We have certainly had a few problems. On team briefings in particular, we still have a long way to go before we can say we are getting full value out of the system. In an industry where time is money, the manhours involved in team briefing are quite considerable and the original investment in training costs alone amounted to about £20,000. Our main problem at the present time is that the largest manual staff union on site, the AEU, representing about 1,200 people, have consistently refused to allow their members to participate in team briefing and we have so far not confronted this problem. In areas where team briefing is working, there is evidence that some middle managers are simply passing down the core brief received from on high and are not exploiting the opportunity briefing provides for reviewing the teams progress or discussing local issues. In spite of the fact that it is prepared by the directors themselves, the core brief is often the subject of criticism. We have to be constantly aware of the need for the core brief to be interesting and to contain new information that is not available from anywhere else. It is often tempting to play safe and to stick to information that is already cut and dried. We even have some managers who 15 months later are still determined to keep their departmental communications meetings separate from team briefing. Thus, team briefing remains an alien system imposed by someone else.

We still have not tackled the problem of the poor visibility of management. One feature of the expansion we are currently enjoying is that almost all of the executives and managers are working flat out to get the job done. That is, the job they perceive to be important. It is difficult to persuade them that making themselves visible and accessible to their teams is an equally important part of their day-to-day management task which is likely to be just as productive.

However, there is some good news. With all its problems, team briefing has given us something we never had before. There is now an established discipline of regular two-way communication with the majority of employees every month. With the exception of the first level supervisors in the AEU areas, all supervisors now have the opportunity to act as leaders of their particular teams. There are an increasing number of areas where team briefing is working extremely well. In these areas, there is evidence to suggest that it is having a positive effect on the relationship between the supervisors and their teams, especially at grass roots level. Even in those areas where it is not being conducted as it should, there is strong opposition to any suggestion that it should be withdrawn. I firmly believe that if we continue to strive to make team briefing effective in all areas, we will eventually build it in to the management culture at Filton to everyone's benefit. After all, team briefing is only something that good management are already doing.

As far as the other changes are concerned, it was to be expected that the new notice boards would not set the world alight, but the new house magazine and the suggestion scheme have proved to be real success stories. *Filton News* has become an eagerly awaited monthly event and we have twice had to increase the print run from its original 4,500 copies to now over 6,500. We are receiving quite a number of letters every month, and some of them are fairly provocative. However, *all* letters so far received have been published and have received a considered reply. We also have a regular General Manager's column which he writes himself and which appears to be widely read. The suggestion scheme has been so successful that the full time administrator is currently finding it difficult to cope. We are receiving an average of over 100 suggestions a month and in the first year of the scheme paid out £31,000 in awards to nearly 300 successful suggestions. The amount saved can be conservatively estimated at three times the amount paid out, but, more important than that, the scheme has given employees a real sense of involvement in the success of the business.

The videos and accompanying brochure are also seen as worthwhile investments which will continue.

So, in spite of some serious difficulties, I believe that the first year of our new communications programme has been reasonably successful. The cost of the programme in terms of time has been considerable and, as I said earlier, we will not be able to quantify the results of our efforts for some time to come.

However, feedback indicates that the communications scene at Filton has much improved in the past year or so. We shall soon find out if this is true as British Aerospace are launching another company-wide MORI poll due to be carried out next month. I shall be surprised and disappointed if Filton has not significantly improved its position this time around.

The future

Where do we go from here? What is certain is that we cannot rest on our laurels. We have created an expectation in the workforce and we would be very foolish not to try to satisfy it. In October 1986 a new General Manager was appointed at Filton, a young man by British Aerospace standards, with a very progressive management style. He is determined to not only refine the now established communications methods, but build them into an integrated overall framework for communications and employee involvement.

In the few months since his arrival, he has already put together an action plan designed to get the best out of people and to maximise on the performance of groups and individuals which in turn will have a direct effect on the success of our business. An important part of this plan is to continue the improvement of the communications framework including:

- refined existing communications methods
- executive/management briefings
- publication of unit plan
- constructive management/union interaction
- attitude survey
- induction/foundation training
- employee handbook

The benefits that we hope to achieve are enormous. Some would say that the risks are also enormous, but we believe it is the right way to go and that we will be successful in our objectives. Only time will tell.

Implementing the information audit

David R. Worlock

Electronic Publishing Services Ltd

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

When the EUROLEX researchers, in the early phases of legal information market research in this country, asked lawyers what information they expected to find on a legal database, the answer (once the concept of a database had been explained) came back clearly: 'everything'. EUROLEX market research and the discrimination of lawyers both improved during the five year life of that project. Yet the answer contains a salutary lesson which is greater than a mere representation of the conservative nature of lawyers faced by a question they had not previously encountered and seeking an answer that had to be in some respects, at least, correct. The answer 'everything' also represents our heightened expectations of all electronic information delivery methods, our over-hyped presumption that the simple addition of a new technology will provide information values which create knowledge and solve problems without the necessity for clear definition of both the knowledge and the problems on the way.

In fact, it could well be argued that the application of the convergent technologies of computer-assisted storage and retrieval with electronic communications has obscured the knowledge and increased the problems. At one end of the marketplace a multiplicity of low price sources of unstructured data obscure real information values; at the other end, competing high value information services seek greater market share where service differentiation is diminishing and overlap is becoming a serious problem. You can buy the full text of certain newspapers on any database street corner: nine value-added services compete for the company information market. We are beginning to suffer badly from a multiplicity of sources, a lack of market recognition of information values, and the total absence of a coherent market-based argument for implementing technical change for information's sake.

Yet these words are being written at a time when we are bent upon a great campaign to extend the benefits of the information communication revolution to the end-user. And to an extent the information industry is being forced to make a rationalisation at the behest of the hardware manufacturers. A micro on every desk – 'getting it onto the mahogany' as the US pioneers of IT for lawyers used to say – may be good for IT (and what is good for IT may well be good for the economy), but can it be justified solely in terms of the enhancement of a business executive's or a professional's information handling and resourcing activity? The end-

Aslib Proceedings, **39** (9), September 1987, p.255–260. Printed in Great Britain

user is, it appears, quite sanely uninterested in technology for its own sake. Market-responsive applications are forced into two camps: the 'quality' sale and the 'competition' sale. Almost all hardware (and much software) advertising thus stresses one or both arguments: 'our boxes will improve your top line (expand your business scope) while improving your bottom line (reduce your costs)' and 'our boxes will improve your competitive edge (over competitor X, who has not got them, or in the eyes of client Y, who is easily impressed by screens, or by applying the quality argument to competition)'.

Talking about information audits at a time like this may seem a Canute-like gesture. There is much about the marketing of information which is irrational, and at least some of that irrationality is shared with all buying decisions. Conscious efforts, however, to apply criteria of selection and judgement do have a place, not least because the language of information audits echoes the language in which the marketing argument is couched. Audit suggests that those payoffs at the top and bottom line are at least measurable in some way, with the added bonus that the idea of an 'audit trail' leaves a line of clearly-made decisions available for subsequent managers to examine and evaluate. Naturally, as with financial auditing, there is a tendency for matters to become less precise and more fuzzy when more salient detail is added. Just as the clear-cut lines of the mega-corporation's annual report hide beneath their financial generalisations, many bodged and hasty comparisons at operating company level, so subjecting information processes to decision-making audits requires as much judgement as accuracy. This paper can only provide a suggested framework of headings for an auditing process: the judgement, as with financial audits, must rest with the practitioner.

My colleagues and myself have now applied these headings and variations of them in a variety of different contexts. We first found important applications amongst professional partnerships, where information requirements were widely spread and where each practitioner could be genuinely regarded as an information professional. We then found a justifying response amongst information providers, who sought criteria for the selection of dissemination media and who wanted genuinely market-derived arguments for new electronic publishing projects. Some of these began in turn to apply the criteria internally, to their own information-gathering activities. Like Thurber's aunt, who saw the danger of electrical flooding resulting from sockets without light bulbs, they became convinced that the totality of information collected for their own major print product was being wasted and was leaking away uncontrollably once the major product had been cut away from the body of researched information. Could the information left on the cutting room floor have new values in digital form that it lacked in cold type? And finally, the network operations, seeking to add value to transmitted data, sought market arguments that reflected information value in terms of its positioning or proximity to the user. What information was required close to the user, hung in the VAN, and what might be susceptible to gateway or remote access? Only an auditing valuation of information in use in the marketplace seemed to begin to address these questions.

During this process we have arrived at some suggestions for at least five sets of audit criteria. We do not suggest that these are exclusive, that they are offered in the right order or that they should all be employed in each evaluation. We do represent them, however, as having been of value to us in situations where both internal and external, local and remote information resources had to be evaluated within global information requirements. They are:

utility analysis
quality values
productivity factors
implementation criteria
strategic impact statements

We come by *utility analysis* through the refinement of the market research procedures disparagingly referred to in the opening statement of this paper. We began to realise that our relationship to our users was not a reflection of some 'cargo-cult' mentality – they did not worship our information goods for their own sake or for the values with which we had so lovingly invested them – but that our usefulness subsisted entirely in our ability to resource a transaction of inherent business value with the appropriate information at the right time. Therefore it became crucially important to examine the client's actual business activity in preference to his information needs. From this we could create some approximate analysis of requirements which could be structured in terms of information resources. Reverting to the EUROLEX lawyers, we called this a hierarchy of needs. It reflected the everyday transactions which could be answered by a solicitor out of his own brain (or a colleague's); out of *Law Made Simple* concealed in his desk drawer; out of the relevant loose-leaf legal encyclopaedia kept on his office shelf; out of his library resources, using secretaries and articled clerks as intermediaries; or out of a barrister's chambers delving for answers in the 'unbound' cases stored in the Supreme Court library.

Once a hierarchy of needs had been produced, the next stage was relatively simple. A hierarchical model of an information service could be produced which approximated to those requirements. This might involve, to use the EUROLEX example again, positioning current awareness and rapid abstracting services to feed update requirements in fast moving legal sectors, while utilising legal secondary texts and encyclopaedias to create updatable reference files, which would provide commentary and, in many cases, solutions, while offering cross-references for deeper (though more occasional) searching in full-text case law and statute files. Once implemented, we found that this model valuably concentrated our attention on the transactions and not upon the information, and led us naturally to the criteria which succeed elementary usefulness.

It will be noted that this type of utility analysis currently ignores 'value-added'. Yet, if auditing anything is remotely useful, then it should encompass a recognition of 'values'. These we found embedded in the quality and productivity factors. We therefore implemented a review of *quality values* by examining the selection criteria involved, under the following headings:

- speed of access – 'if it's not instant, it's worthless' (very often the case in real time systems, though totally absent in others where this factor can be grossly overstressed;
- comprehensiveness: archive power 'every statutory instrument in force';
- cost: the auditable cost-saving of answering a question this way: notoriously hard to trap;
- recency: the undertaking to supply the most up to date information available;
- currency: the undertaking to supply all of the available information which has not been supplemented.

If you add these values to hierarchy of information then we contend that a stronger market derivation will result. When implementing such an audit to evaluate an in house system connected to external source materials, point-scoring criteria such as these against a hierarchy of perceived needs can downgrade wasteful buy-ins as well as eliminating redundant local storage. When this has been done *productivity factors* can be brought into play. These are the qualities of retrieval software or text retrieval engines and include that spectrum of textual value enhancement which currently runs the range of:

- document structure (which remains vital for comparability);
- indexing, thesaurus development or full text search capabilities;
- rule-based guidance systems structured to allow pathway access to 'predictable' answers;
- knowledge-based systems, permitting the punctuation of information with experience to produce less predictable results (and possibly even wisdom).

We are now ready to design and build a system. Continuing the legal analogy (and with apologies to the 1985 IBM LEGNET VANs trial which exhibited some of these characteristics), a design for an information system for a conveyancing solicitor dealing in real property titles might, after such an evaluation, show some of these characteristics:

- network access to local authority and land registry files for basic transaction research;
- interfaces to create and store screen-based transactions and make them interact with in-house client, accounting and precedent files;
- national directories of fellow professionals held locally on CD-ROM: updates mail-dropped quarterly by electronic mail into local storage;

- national directory of postcodes held within the network to facilitate, via digital mapping, house location with local, education, water, gas and electricity authority boundaries;
- gateways with menu-driven access and unified command structures to enable interrogation of client credit-ratings, his company accounts, his recent press notoriety, or the likelihood of possible success in a pending planning appeal – an SDI service run on key clients;
- planning law encyclopaedias held locally on CD-ROM and updated quarterly in line with an online weekly update service.

It is noteworthy that the analysis of requirements for this conveyancer (whose sector of the legal profession currently accounts for more than 70 per cent of gross earnings) shows predominantly non-legal information requirements and little remote database searching. The pattern is not untypical. But it does set up the audit for a study of *implementation factors*. We have tended to group these questions, which are the most project-specific of all, under three major headings:

1. *Ownership*. Can we get it? Can we afford it? Can we download it, in whole or in part? Can we fuse externally sourced data with our own? Who owns the result?
2. *Locations*. Do we buy tapes? Or access via networks? Do we find that cost and compatibility are the predominant factors here, with local storage costs and type reformatting to achieve compatibility decreasing in relation to high initial external database fixed costs and subscriber rates?
3. *Interfaces*. Can we buy or customise interface technology which will interlink our chosen data resources, internal and external, so that: we have appropriate hardware/software configurations, our design looks deliberate; new users can concentrate on the transactions and learn from the screen; all switching between storage points, whether local mainframe, remote mainframe, network or optical memory storage, is transparent to the end-user.

Under each of these headings real problems may be encountered. They are all solvable – at a price. Whether we pay that price involves us in returning to the start of the audit again, and re-addressing the initial strategic justification. In rather more detail we shall want the audit to analyse the competitive benefits we shall gain from implementation, and indicate whether they are likely to be temporary or permanent. Will the effect run across our business in a primary or total benefit, or will it be a case of partial, second order improvements? We shall want to look at the improvements themselves in terms of:

- differentiating products or services from their competitors;
- identifying or exploiting a niche in the marketplace;
- reducing costs;
- increasing standards of performance;

- locking in trading partners;
- excluding competitors;
- creating new business opportunities.

This widely-used listing is not exhaustive, but it does return us to the audit priority.

The final product of our audit should be a record of the decision-making chain which we used when implementing change in our information business. We may end up making the same decisions that we might have made before, but at the very least we may have discovered more about the nature of our business in the process. We may even have discovered that there were systems and services we could do without, as well as resources currently available which are under exploited. Last of all, the next manager will be able to see exactly what our rationale was – if we store the audit results in a way that allows him to access them!

Breaking free: survival and growth in a commercial climate

David Rigglesford

Resource Manager, Employment Relations Associates

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

I am basing my paper on my own experiences with Employment Relations during a period of transition from government funding to private funding. I hope you will be able to learn something from these experiences; some things we have done well, others we have had to learn.

By way of background, I should explain that the Employment Relations Resource Centre (then known as the Industrial Relations Training Resource Centre) was established by the Manpower Services Commission in 1977. Funding from the MSC was gradually phased out until 1985, when the information service was expected to stand alone and be self-financing. In 1986, Employment Relations became a member of Arthur Young International, providing human resource consulting services. The expectations of Arthur Young are that the information service should be totally self-financing.

In the title of this paper, I refer to 'survival' and 'growth' – it must be said that the emphasis has been on the former, which has to be the first priority! I do believe that as well as 'breaking' away from a 'free' service, we are also talking about an opportunity to 'break free' from some of the constraints imposed by external funding which supports a 'free' service. Of course, no service can be entirely free. I shall touch on four aspects of this subject:

- our experience of the needs of the market;
- the need for careful thought on financial and administrative matters;
- the need for flexible management;
- the need to consider staff, the 'neglected resource'.

The market

In looking at the market, I can do no better than refer to a well-worn cliché, Kipling's 'six honest serving men'. These, you may recall, are 'What, why, when, how, where, and who.' First of all, *what*. What are we selling? Equally important, what is the customer buying? Are they the same? In short, we need to have a clear definition of our product. Are we simply selling information for others to process, or should we attempt to

Aslib Proceedings, 39 (9), September 1987, p.261–266. Printed in Great Britain

evaluate the information in any way? Are we, in fact, providing raw material or a finished product?

In fact, we sometimes provide sources of information, sometimes the information itself, and sometimes advice on the application of the information to individual circumstances. All of these complement the extended consultancy work which forms the main element of the company's work.

The second question is *who* are we selling to? Who are our customers? In particular, who is the end user of the information? In many cases, we found that we were passing information through an intermediary, who would often process the information further before passing it on to the end-user. One specific issue which has been of concern is the distinction between the user of the information, and the person who signs the cheques. In the past, there has been no need to concern ourselves with the source of purchasing power. Now, we have to recognize that this may be located away from our information user, with someone who still needs to be convinced of the value of our services. Accordingly, we have had to set aside some time to concern ourselves with the financial decision makers.

The third question now, *why* buy *our* product, as opposed to other services? We have had to identify what it is that makes our service unique, and what it is that makes it better (or worse) than our competitors. Our approach here was to carry out a survey of users of our (free) service, as well as those identified as potential users. A specific focus here was to try to identify the likely level of resistance to payment for a service that had previously been available free of charge.

How do people find out about us? This has obvious implications for how we sell the service, since if no-one knows that you exist, no-one will use the service. We made use of a mix of forms of promotion, including advertising, press releases, conferences, exhibitions, and placing articles in relevant journals. Advertising in particular is not cheap, and it is for this reason that we need a very clear idea of where our market lies.

We found that we were able to gain valuable publicity through sending out press releases to relevant personnel and training journals. Many of these journals welcome information, and were able to give us some visibility for a very minor outlay. Whatever the mix of promotional media that seems appropriate for you, you must allocate a significant amount of time and money to your marketing effort.

The fifth question, *where* are we selling, was not a major factor for us. Our service covers the whole of the United Kingdom, and is aimed primarily at the industrial, commercial and educational sectors. Some of you may be selling to a specific region or locality, or indeed to a specific sector; I would urge you here to consider all options – past restraints may condition you to think along similar lines for the future, when in fact, your service may appeal to a wider audience.

Finally *when* should we sell? To some this may seem a strange question, but we are probably all aware of peaks and troughs of demand throughout the year, or even the week. For example, academic breaks, Christmas and other holiday periods reduce our work load, and we notice a significant increase in demand on Fridays – this seems to be a good day for making telephone calls! Whatever the pattern, convenience to the customer must always be of paramount concern.

In the past, we would not have needed to ask many of these questions. Now, we must, not just once, but on a continuing basis in order to take account of changing circumstances.

It may be useful to remind ourselves what we are up against. Margaret Slater, in her 1981 study of non-use of industrial and commercial information services, found that 87 per cent of information unit managers perceived non-use to be a problem. Reasons given for non-use included:

- location/accessibility not always convenient for use.
- lack of awareness or perceived relevance
- the past reputation of the service
- unhelpfulness of information staff
- potential users 'too busy' (!)

All of these *must* be overcome if you are to survive and grow.

Finance/administration

This is a rather less glamorous, but equally essential aspect of information management, which needs close attention to detail. In our own situation, the provision of funding to some extent dictated the procedures for financial and other administrative procedures. It is all too easy to neglect such procedures when the pressure seems to be removed. We have found a need for careful planning of systems and procedures, and for a great deal of effort to be put into costing and budgeting.

On the costing side, we had to consider the cost of providing all parts of the building set aside for information use, including work areas and storage. This provision has to take account of heating, lighting, telephones, computers and other physical assets, photocopying facilities, stationery and furnishings. The elements of the service itself also need to be costed: selecting, processing, controlling and maintaining the documents in the collection; provision of access to the collection via catalogues and online provision; provision of personal assistance to visitors and callers: the production of publications such as abstracting services or newsletters.

It is also helpful to allow for the cost of internal communications. Communicating with your own staff does take time, and this should be accounted for. Planning and administration, and other management tasks, should also be costed fully, in other words, your own time as information manager. We have also had to allow for some aspects of the service to be bought in as support for our internal resources.

We had a considerable debate before deciding to opt for a subscription-based charging system, rather than charging on a time-based system at so much per hour. We were nervous of charging for time spent on a fruitless search – after all, two hours search time and nothing to show for it may be a reflection of our incompetence rather than an absence of relevant information. Therefore we went for a subscription service, taking into account the administrative convenience, but the debate continues.

Knowing that *every* penny counts concentrates the mind wonderfully, with the pressure to keep costs down and productivity high being very real. There are other pressures that have to be accepted and coped with by us all:

- increasing costs of books, journals, etc;
- increasing range of books, journals, etc;
- growing demand for our services;
- wage/salary increases;
- budget constraints;
- the need to adopt new technology;
- accommodation requirements;
- competition *within* the organisation for scarce resources.

Within Employment Relations, the information service is expected to operate with financial independence from our consultancy and training services, after making an allowance for the use these services make of the information service.

Flexible management

The theme for this conference is 'The Adaptive Information Manager', a theme which should be embraced by us all. If we are to succeed in a commercial climate, it calls for us to have an entrepreneurial approach to management, not being afraid of innovation. Sadly, individuals skilled in these areas would not always identify library/information work as a suitable outlet for such skills, so it is up to us the present members of the profession, to demonstrate our own skills to full effect.

We *are* able to demonstrate a feel for unexpressed needs, to anticipate future needs, and are well placed to develop these skills, but we have to gain credibility with other professions, and with our organisational peers. They should be able to respect our abilities as we respect theirs, perhaps we should demonstrate greater respect for our own skills! We should also demonstrate our communication skills to good effect.

I would ask you to consider, honestly, how well *you* have resolved these four issues:

1) *Managing* vs *administration*
– we are known to be effective at exercising logic, order and method, in short, at running a smooth *administration.* We should be actively shaping, directing effort, motivating, in fact taking responsibility, *managing.*

2) *Effectiveness* vs *efficiency*
– *efficiency* may disguise a lack of progress, responding to short term pressures, our priority being a tidy desk. *Effectiveness* requires us to be more concerned with progress, and results.

3) *Overseeing* vs *doing*

– it is tempting to get personally involved in *doing* familiar or exciting tasks, when the real challenge lies in managing the people, and *overseeing* the task.

4) *Innovating* vs *preserving status quo*

– rather than concerning ourselves with maintaining our systems and procedures, we should be setting aside time for thinking, creating, experimenting and research, skilfully interpreting the business environment, and refining working practices to account for these.

We should manage our changing circumstances as an *opportunity*, and create the appropriate climate for our staff. There is no place for fear or apprehension, it is our role to support, to encourage – to manage.

Staff

This brings me to an area I regard as most important – staff, our 'neglected resource.'

Everyone must be clear about the goals of the organisation, and of the department. To use the current jargon of 'excellence', we need a clear 'mission' or 'vision'. In order to achieve these goals, we need to give some attention to building a team. This can begin at the recruitment and selection stage, ensuring that you gather the right people to deliver what is required. Most of us, however, will have to develop and train our existing staff to meet changing requirements. Turning a group of individuals into a team requires skill and effort, and cannot be left to chance. It will not just happen as if through some natural process. Maintaining the team also requires constant attention.

We must accept the inevitability of certain factors which, in an ideal world, I am sure we would rather be without. I include here time pressures, conflict, personality clashes, change and stress. *All* organisations and departments have these; they must be managed, and that is *our* responsibility. We must accept this responsibility, take control, and cope with the problems.

Team development can be achieved through a number of things, examples of which I will explore. Consistency and fairness in our approach to problem solving will help the team to work well. We should take account of the needs of individual members of the team, such as:

- recognition: we should show our appreciation of good work.
- feedback: everyone likes to know how they are performing, whether through a formal performance appraisal, employee counselling, or day-to-day informal contacts.
- development: individuals appreciate efforts made, through training or otherwise, to develop their skills and knowledge.
- responsibility: a key management skill is the ability to delegate work correctly, with guidance rather than interference from above.
- self esteem: we all like to feel we have some power, some control or influence over our working situation.

We should encourage mutual support within the team, making use of individual strengths and recognising weaknesses. The atmosphere should be one of co-operation, and interdependence, with each member respecting the contribution of others to overall team performance. Communication is important, and we should encourage openness. The team should be told what is going on; regularly and honestly, good news and bad news. From this will come the trust that is an essential part of team development. There should be regular reviews of progress, of performance overall, and on specific projects. This may take place in the form of a departmental meeting, or as a one-to-one discussion.

Sadly, there are too many examples around nowadays of economic pressures and business requirements causing individual managers, including information managers, to neglect some of these points I have outlined. In my experience, without the support of your entire team, growth, even survival, will be much more difficult to achieve.

Conclusion

I have attempted in this paper to highlight some of the issues which have been of concern to me during our own period of transition. I am not going to pretend that I have all the answers – far from it! But it does seem to me that similar issues will be faced by many of us in the years to come. I believe that the survival of my own service is assured – we must now achieve the growth. I hope that I have been able to make a small contribution to the survival and growth of information management in a wider context. The future provides a challenge and an opportunity for us all.

The impact of information management on corporate cultures

Forest Woody Horton, Jr

Vice President, Aslib

Paper presented at the 59th Aslib Annual Conference, 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987.

I'm delighted to have been invited once again to an Aslib conference to share with you some views on the subject of information management. The Association's selection of the theme 'The Adaptive Information Manager' this year is particularly timely because it seems to me that we are at a juncture in the introduction of information management into organisations where there is neither so much a problem of philosophical acceptance of the idea, nor of methodological implementation alternatives (not that those concerns are unimportant), as there is the question of the impact of such a major management reform on the ability of enterprises to adapt and assimilate. In short the crucial issue is how resilient the company, or other kind of organisation is to the kaleidoscopic variety of impacts and changes.

One way of addressing this range of impacts and changes is to think in terms of what the behavioural scientist, sociologist, and management consultant often call 'organisational culture'. By taking that approach, we open the door not just to the technical and technological dimensions of information management, nor just to the aspects of designing and developing information systems and architectures, but to the whole host of people, ethical, social, political, and other kinds of concerns with which every enterprise needs to be concerned.

So if you will permit me, I would like to start down a list of 'cultural impacts', and briefly highlight what I consider to be some of the more important concerns under each heading.

First, *organisational structure*. The introduction of the information management idea into organisations implicitly carries with it very substantial structural change consequences. For one, the integration of information technologies, operating information programs, and ongoing information services into a cohesive policy and operational framework implicitly means reshuffling people and blocks on the organisational chart.

Depending on some of the other factors I shall address in a moment, the trauma associated with this reconfiguration of people and positions, operating program responsibilities, traditional budgetary authorities, and the way plant and facilities have been traditionally controlled, can be smooth or agonising. Many organisations are finding that the best way to

Aslib Proceedings, 39 (9), September 1987, p 267–274. Printed in Great Britain

deal with the structural challenges is on a gradual, evolutionary basis – one step at a time.

The noted international consultant, John Diebold, recommends starting first with a reconfiguration of information *policies*, leaving the organisational chart alone, partly on the grounds that the trauma will be much lessened. His rationale appears to be that putting information management policies into place, all by itself, is a soft, low key approach that helps condition the enterprise for the more difficult steps to come.

But even Diebold acknowledges the ultimate need to restructure authorities, responsibilities, functions, programs, and resource allocation conventions. What is important, it seems to me, is that however information management is introduced, organisations, and the people in them, should not be misled. Fortunately, in most instances with which I'm familiar, restructuring the information functions brings with it not just a consolidation of activities at the same level they were at before, but also, either concurrently or later, raising the entire newly configured IM function a level or two in the hierarchy. In that way, broadened and elevated career expectations and opportunities at least partially compensate for the shock effects.

Second, the *redistribution of power*. Make no mistake about it, the introduction of information management directly impacts how the power in an organisation is distributed. There are two dimensions – the *formal* power structure and the informal power structure.

Taking the formal power structure first, to the extent that the chief executive, the board of directors, the stockholders, or other principal constituencies and power holders have long sought, for whatever reason, to redistribute power within the organisation, the occasion of introducing IM may be seen as a fortuitous and timely vehicle for them to use. Perhaps a favourite son is given the chief information officer mantle. Perhaps a trouble-maker is given his walking papers. Perhaps an internal information champion is brought in to help broker departmental power struggles that may have festered for a long time.

Once again, if you are the IM change agent, internal or external, be forewarned so that you may be forearmed. For example, more than once, I learned only weeks or months after I began my work that one of the most promising insider IM champions on whom I expected to depend heavily had long been slotted for the guillotine. Had I known that, I could have crafted my own strategies and tactics accordingly. May you profit from lessons I've learned.

With respect to the informal power structure, I'm sure you will agree that information is power. Many organisations have resisted the IM approach largely on the grounds that some unscrupulous information czar would seize the reins of power because of the superior knowledge quotient he or she might achieve by virtue of becoming privy to all the organisation's trade and financial secrets, not to mention its people secrets.

My observation has been, however, that the CIO concept is here to stay. Indeed, it will mean power *is* redistributed. And if executive level information managers abuse their trusts, they shall be dealt with no more leniently than the convicted controller caught embezzling the company's funds, who is then sent to an appropriate financial Elba.

Third, the *image and personality of the organisation.* There are two faces to this Janus coin. First, there is the *external* image and personality the organisation presents to its consumers, its stockholders, and other outside constituencies. And then there is the *internal* image and personality of the organisation as it is presented inside to its employees and managers.

Usually, both with respect to the external and the internal image, organisations tend to be either inwardly-oriented or introvertive, or outwardly-oriented or extrovertive. But it is possible for some firms to exhibit a kind of organisational split personality, and be an external Dr Jekyll and an internal Mr Hyde.

Sociological indicators of an organisation's personality include: its tolerance of intrapreneurialism and free-wheeling creative thinking; the degree to which its personnel policies toward training and education are progressive; just what goes on at the water cooler during coffee breaks; and, what is important to us in this discussion, the *organisation's attitude toward the value of information resources.*

Some companies have deliberately cultivated an image of staid conservatism to their customers, their suppliers, their owners (public or private), and their other clientele. They have fortified themselves in their organisational castles so as to be resistant to change. Let me call these introvertive firms the tortoises. You all know whom I'm talking about – 'we sell only to widows and orphans'.

At the other end of the spectrum, other kinds of firms, the extroverts, want to be seen as avant garde and trend setters. Let me call those extrovertive firms the hares. Here we have in the US the Steve Jobs of Apple and the whole Silicon Valley tribe in California. I'm sure there are British counterparts.

In between, the rest of us plod along and periodically take a peek to see which of the two camps is doing best. Let us call ourselves the middle-of-the-roaders or the sleek and beautiful gazelles.

Now what this means in terms of information management is that the more conservative and introvertive organisation will move cautiously in introducing information management, perhaps one subsidiary, one plant, one sales office or one product line at a time. Whereas the relatively liberal, more extrovert enterprise will swallow the IM idea hook, line, and sinker. Both the incremental, gradual approach, and the precipitous or holistic approach have their advantages and disadvantages. The interesting thing to me is that apparently both approaches are working successfully.

Some gurus admonish the tortoises in the private sector to 'get with it' and adopt information management, or else they shall risk falling behind in the race with their competitors. I believe there is something to that line of argument, although it can be over done. If you are in a highly competitive industry where the judicious application of modern information technologies could help you leapfrog ahead of the competition, then, yes, you probably will have to move quicker. But if you are a monopolist basking in a highly secure marketplace, then you probably can wait a bit longer. But not too long in this age of lightning speed mergers, diversifications, and technological volatility in the marketplace.

Organisations with introvertive personalities, interestingly, seem to take to information management easier than do their extrovertive counterparts. This might at first seem counterintuitive. But my observation has been that the introvertive type of organisation for some reason is more sensitive to the role of information resources in the scheme of things. That firm seems somehow better to value and appreciate how steps taken to organise, index, store, retrieve, and disseminate data and knowledge are of great importance to the organisation. I frankly have not been able to do any causal analysis, so I cannot even speculate why. Perhaps some of you may have a theory, in which case I should certainly like to hear it.

Extrovertive organisations seem to assume that information resources are somehow of secondary and subordinate importance. I have no hard evidence to back this up, but my prejudice is that extrovertive enterprises tend to be filled with people who believe that information is 'somebody else's problem'. There is a veneer of arrogance around that attitude, which I find is sometimes so strong that in some organisational cultures it almost ascends to the level of outright hostility to the introduction not just of information management, but to simple information technologies like word processors. But again, I regret I cannot offer hard scientific data to back up my informal observations. The hypothesis, I believe, is worth testing, however.

Fourth, *the style of the chief executive.* I won't dwell long on what I think is one of the more obvious impacts of IM on organisational culture. The literature is filled with case examples distinguishing between: autocratic and benign leaders; between delegators of authority and one man shows; between patriarchal overlords who dictate every decision the organisation takes and consensual group decision-making models. And I dare say a few of you may have been reading that the Tower Commission's report on the US Iran Contra Arms scandal where President Reagan's 'management style' was faulted for being too laid back.

I have been able to find a fairly direct correlation between the adaptability of organisations to information management and the style of chief executives. From time to time I've noted a situation where a chief executive who was uncomfortable with the IM idea because it didn't seem to fit his particular style of leadership and management had difficulty in implementing the concept. Managers who really do believe in the value of putting information management tools directly into the hands of end-users, instead of trying to make them jump through all kinds of hoops to get at needed information resources, seem more prone to adopt the IM idea, and make a success out of it. They see *sharing* as a *positive* and constructive objective, not a threat.

On the other hand, leaders who want to continue to compartmentalise their subordinates and operations by giving them access only to that small fraction of the overall corporate database for which they can put forward an ironclad justification, seem less inclined to follow IM precepts. One is tempted to speculate (but of course I won't) that such chief executives believe in the application of the 'divide and conquer' military strategies of field marshals to their own internal organisational battlefields. It is almost as if they take some perverse joy in bringing about destructive competition among their own lieutenants, using information resources as the weapon. Few of these divide-and-conquer commanders, in my view, will last to the end of the century.

Fifth, *risk taking and resistance to change.* An organisation's attitude toward risk taking and making changes is still another element of culture. Organisational theorists have long told us that, just as in the words of Ecclesiastes 'there is a time to sow, and a time to reap', so in the context of organisational systems there is a time to behave in the normative mode and a time to behave in the crisis mode. Theorists have one of those marvellous words all of us except academicians and scholars tend to forget – homeostasis. It means, simply, re-establishing the status quo. That is, equilibrium between the need to periodically remain stable and resist change, and the need to occasionally squarely face up to and assimilate change.

The trick is when? What are the bellweathers that tell us the wind is shifting and we need to tack, and which direction in which to tack? Of course if I knew the answers to those questions I might not be standing here, mightn't I, but rather be sailing out there on the channel!

Much has to do with whether or not upsetting the homeostatic condition to embrace IM is worth it. That is, are the problems and 'diseases' some companies face such as strategic planning deficiencies, poor share of the market, the need for fresh new products, and so on, susceptible to the medicine of better information, and better managed information? In some cases the problems *may* be susceptible. But in others they may not.

The point is, the organisation and its managers must take this factor into account before rushing out to embrace IM. If their competitive challenges are not so critical, and if the information resource and its management are not the right medicine, at least not at the moment, they may wish to invest time and effort in first conditioning their organisational culture to understand and prepare for impending changes, should they decide they're fundamentally in a normative stage at the present time but the balance must be shifted.

Sixth, *secrecy or openness.* An organisation's attitude and behaviour toward the question of openness at the one extreme, or secrecy at the other, is another important variable in the information management equation. The connection, I believe, has to do with whether or not the underlying premises of: increased sharing of information between and among people and organisational units; increased access to a larger fraction of the corporate databases; increased availability of both internal and external information resources to all levels of management, professional, and clerical/support personnel, can be tolerated, much less welcomed, by the enterprise.

Some kinds of organisations traditionally thrive in a rich and open information interchange environment where data and knowledge resources are freely exchanged. For example, the think tanks, the R&D outfits, academic institutions, and leading edge hi-tech companies.

On the other hand, other kinds of organisations have resisted such an open atmosphere and tend to be much more closed in their attitude to how much information they can tolerate. For example, firms in stable marketplaces with a long secured share of the market, monopolists and oligopolists, organisations that fancy themselves as 'creative' and insist that the skills and expertise of key professionals are a *surrogate* for information (advertising companies, for example), and governments inclined to excessive censorship and secrecy.

Some researchers have noted that people in groups tend to be overly concerned with the 'ownership of ideas', with compromise seen as capitulation. Dr Robert J. Sternberg, the IBM professor of psychology and education at Yale University, says this attitude stands in the way of the kind of co-operative critical thinking that can produce sound decisions. In his own classes, Dr Sternberg uses the example of disarmament negotiations, where he contends there is no clearly defined right or wrong answer. What students learn from a good course on critical thinking is how to approach deep and complex problems in deep and complex ways. More and better information resources, in short, applied to a given problem, necessarily increases the complexity of the decision-making process. Some organisations take more kindly to this complicating consequence than do others.

But if one thinks about this for a moment, it seems to me that the decision-making process is precisely where IM can make one of its greatest contributions. Already we see organisations floundering because they've thrown more and more hardware and software at the problem, instead of thinking through an IM solution. There is a lot of keeping fingers crossed, and praying going on in those companies. Certainly computer literacy is needed. But information literacy is just waiting in the wings, awaiting its call on stage.

Seventh, the impacts *in human terms*. I suspect virtually all of you have read more than one paper on the special stresses and anxieties this computer age is bringing with it. Fear of being left behind in the job race, fear of exposure to health hazards, fear of mindless technocracy taking over, and fear of the loss of peace of mind are all a part of the fabric of the times in which we live. You cannot shuffle people around to assume new job responsibilities, new interpersonal working relationships, and relocate to new work venues ten or 100 or 1,000 miles away from the old ones, without strengthening personal coping skills of the affected employees.

The chief executive cannot simply paint a new canvas with bright colours and breathtaking landscapes, and then like the little King ask employees to exclaim under duress how much they're going to enjoy the new Information Camelot. Let's face it, contrary to the way the lyric reads in the Camelot musical, there may be lots of sunshine, but there will certainly be a little inclement weather too. The wise chief executive will make sure he or she has some umbrellas and raincoats to hand out.

What are the umbrellas and raincoats? For one, just sharing with affected personnel a concern for their human needs is a good start. You don't have to run an information management charm school or hire a Dr Ruth to do that (for those of you who may not have run into her, Dr Ruth is the sex counsellor woman on imported American television commercials).

For another, creating on-the-job training centres such as self pace information resource centres, affords a private learning environment where septuagenarian chairmen of the board and teenager messengers alike can go to acquire hands-on skills to help them over some of the tougher software and hardware hurdles. Here they can learn without feeling intimidated or embarrassed in front of their peers, subordinates or bosses.

And yet a third Mac to help bring dispirited and disaffected employees in under protective shelter is the judicious use of an organisational consultant with special stress-coping skills. Many clinical psychologists and some psychiatrists in the US are already specialising in this new field.

Some or all of these techniques used in consort should be synchronised with any major organisational moves.

Eighth and last, the *melding of knowledge and culture in the intelligent organisation.* David Vincent tells us that the impact of information on the corporate culture is governed by two basic concepts:

1. Personal and organisational behaviour is a direct result of acquired knowledge, and
2. Knowledge is a result of information that has been transferred.

Vincent says that all corporate cultures are created through the transfer of information, and the resultant knowledge base within a corporation governs the way that its executives and employees are expected to behave. Nonconformist behaviour is usually punished, with the result that an individual or group may be ostracised or set aside.

Knowledge, seen this way, is intertwined with culture because it is a result of information based programming of people or machines to take a predetermined action on new information received. The proper management of corporate culture means the establishment of control over information transfer mechanisms, including information systems, to ensure that executives and employees will send and receive quality information that will produce the optimum effect for the organisation.

Companies that ignore this aspect of management, particularly in situations of corporate mergers and acquisitions, will most likely experience serious losses, Vincent says, as a result of inexplicable anti-corporate behaviour.

Seen in Vincent's way, the intertwining of knowledge and culture may well lead to the notion of the 'intelligent organisation', a metaphor which to our ears now sounds much like as if it comes from the same marketing hype genre as 'knowledge engineering', and, was it only a few years ago, 'expert systems'?

The chief information officer or CIO may well become the organisation's proactive protagonist to advance the melding of knowledge with organisational culture. Which means he or she will have to be even more of a superman or superwoman than we've envisioned until now.

In summary, in my view it does no good to hide our ostrich heads in the sand and pretend as if these eight organisational culture considerations didn't exist. Better to face up to them squarely at the outset because there has been too much unfortunate mis-characterisation of the IM idea. Some data processing and management information systems folk, for example, still see IM as nothing more than a permutation of the management information or MIS idea.

Under the MIS theory, as you know, the idea was that we would be smart enough to collect all the information that top and middle level management could ever need or want and put it into a gigantic central data bank to draw upon leisurely as we might need to. Nothing could be further from reality. Organisational administrators and executives should not be fooled. IM is an entirely different way of looking at the role of information resources in the enterprise. The essence of it is that information itself is a valued but costly resource, and needs to be managed like other resources.

The organisation's stockholders and other vested interest constituencies need to face up to the impacts because major management reforms can and do have bottom-line dividend consequences. Such reforms are not just a case of refurbishing the office furniture or repainting the factory.

The organisation's employees and managers need to face up to the impacts because there are indeed personal risks and opportunities that need to be carefully considered. Virtually all kinds of information professionals in the organisation have new career, educational, and occupational challenges to take into account. Some will remain in their current fields. Others will be retrained and retooled to enter new positions. And a few, let's be honest, will say 'á pox be on both your houses, I'm going into the candlestick making business'.

The adaptive information manager will be the man or woman who looks these cultural impacts in the eye without flinching, and prepares to meet them foursquare.

INFORMATION MANAGEMENT

FROM STRATEGIES TO ACTION

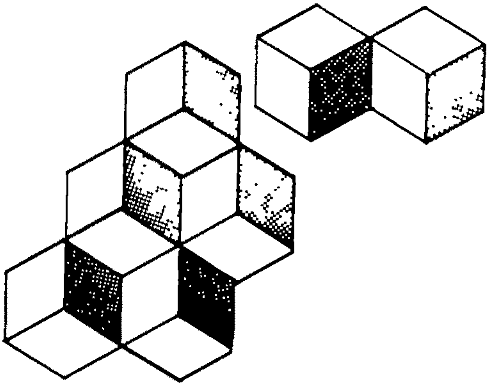
Edited by Blaise Cronin

NOW AVAILABLE FROM ASLIB PUBLICATIONS

A major new book which traces the current developments in information handling in the UK.

Eleven experts from diverse fields of information management have produced this thought-provoking collection of essays which together analyse both the theory and the application of this emerging discipline.

An invaluable guide for practising information managers and students alike.



Available now at £19 — or just £15 to members of Aslib. Complete and mail the form on this page to:

Aslib Publications (Sales)
Information House
26-27 Boswell Street
London WC1N 3JZ

If you prefer, simply telephone 01-430 2671, ext 244 to reserve your copy.

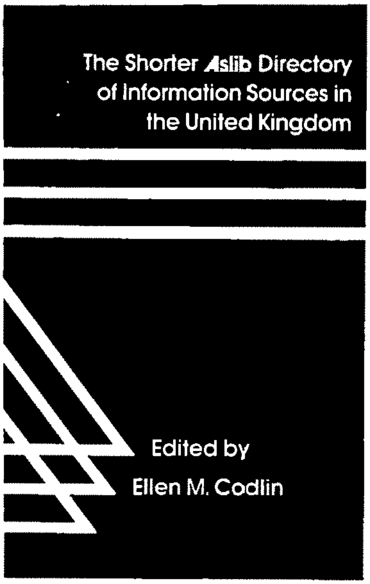
ISBN 0-85142-193-8

ORDER FORM
Please send me . . copies of
INFORMATION MANAGEMENT:
From strategies to action
I am/am not a member of Aslib
Name.. . ...
Organisation . ...
Address ....
I enclose a cheque for £.... . (£19 per copy, £15 to members of Aslib)
OR Please invoice me

Aslib

THE FAST AND EASY WAY TO TRACK DOWN INFORMATION

Concise, comprehensive and authoritative, The Shorter Aslib Directory is the ideal single source reference tool for librarians, journalists, students, writers and researchers of every kind, and anyone whose catholic tastes incline them to journeys of discovery through its pages.



The Shorter Aslib Directory of Information Sources in the United Kingdom

Edited by Ellen M. Codlin

*Full entries with lists of subsidiary bodies and branches, where appropriate.

*A comprehensive and cross-referenced subject index.

*Cross-referencing in the main body of the text.

*An index of abbreviations.

*The title of the person in each case to whom application for information should be made.

*The inclusion of both telephone and telex numbers for each entry.

The Shorter Aslib Directory, edited by Ellen M. Codlin, is available from Aslib and costs £60 (£65 to overseas customers)*. Send payment to Aslib Publications (Sales), 26–27 Boswell Street, London WC1N 3JZ.

*£10 discount to members of Aslib.

254 × 160mm; 1986; viii, 590pp
ISBN 0-85142-199-7, hbk.

Aslib

21
YEARS OF
program

index to program

Volumes 1-20 1966-1986
Compiled by C.W.J. Wilson

An index to **Program: automated library and information systems,** which lists the author, title and subject of every article, short contribution, letter and reviewed item published since its first appearance in 1966.

Index to Program is the ideal single source reference tool for readers of **Program.**

— — — — — — — — — — — — — — — — — ✂

ORDER FORM

☐ Yes please, I would like . . copies of INDEX TO PROGRAM
Price: UK £25 (Aslib members £20); overseas £35 (Aslib members £25)

☐ Payment enclosed ☐ Please invoice me
(Cheques are payable to Aslib)

NAME ____________________ DEPARTMENT ____________________

ORGANISATION ____

ADDRESS ____

____

____________________ SIGNATURE ____________________

Aslib

Publications (Sales), Aslib, Information House,
26-27 Boswell Street, London WC1N 3JZ
Tel: 01-430 2671

ISBN 0-85142-215-2
235 × 155; 90pp; Paperback

THE ESSENTIAL RESEARCH TOOL

INDEX TO THESES

WITH ABSTRACTS

The authoritative and comprehensive bibliography of all 10,000 theses accepted for higher degrees by the universities of Great Britain and Ireland, and the Council for National Academic Awards.

- **FULL COMPREHENSIVE ABSTRACTS** offering an incisive summary of the content
- **AN ENHANCED SUBJECT INDEX** guides you quickly to relevant theses
- **TEN TIMES MORE INFORMATION EVERY QUARTER** allowing you to research with precision and efficiency

Every thesis entry includes a subject classification, abstract number, thesis title, author, university, degree, year, document delivery ordering number and NOW INCLUDES A COMPREHENSIVE ABSTRACT.

NOW EXPANDED AND IMPROVED

Aslib

INDEX TO THESES WITH ABSTRACTS

☐ Yes please, I would like to subscribe to **INDEX TO THESES WITH ABSTRACTS** for one year. **£140** ☐ Payment enclosed ☐ Please invoice me
(Cheques made payable to Aslib)

☐ Yes please, I would like more information on **INDEX TO THESES WITH ABSTRACTS.**

Name ________ Department ________
Organisation ________
Address ________

Postcode ________ Country ________
Signature ________

Expert Information Ltd, Woodside, Hinksey Hill, Oxford OX1 5AU, England Tel Oxford (0865) 730275
Aslib, Information House, 26-27 Boswell Street, London WC1N 3JZ Tel 01 430 2671

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

Professional
Recruitment
Limited

26 JUN 1989

Aslib PROCEEDINGS

Volume 39 Number 10 October 1987

59TH ASLIB ANNUAL CONFERENCE
THE ADAPTIVE INFORMATION MANAGER

Information for business: the business of information 275
Professor Tom Wilson

What business are we really in? 281
John Pickup

A bigger slice: cost justification for library and information services 293
Neil McLean

Leadership as a resource – interpersonal skills 299
David Feldman

Information, strategy and people 303
Jef Mason

Information technology and information work 313
Alan Gilchrist

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 **OCTOBER 1987** **Number 10**

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib, Annual subscriptions to non-members: £65 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Information for business: the business of information

Professor Tom Wilson

University of Sheffield

Paper presented at the 59th Aslib Annual Conference 'The Adaptive Information Manager', University of Sussex, 17–20 March 1987

The Consultancy and Research Unit (CRUS) of the Department of Information Studies at the University of Sheffield has recently carried out a number of investigations into the use of information in business with financial support from the British Library R & D Department On the basis of this work it is possible to identify some characteristics of the business information user and of information needs in business which are of relevance to the aims and objectives of information management.

Let us assume for purposes of argument that we can define information management as being concerned with the effective use of information in organisations. A very simple definition, with, of course, considerable implications, and lots of unanswered questions behind the simplicity. One of the main questions, which this paper seeks to address is: just what kind of information is perceived as being needed in business, and just how can the emerging function of information management help?

There is a certain, in my view misplaced, assumption on the part of many in information work of all kinds that all one needs to do is to open the information store and the users will perceive the relevance of the system and flock to use the information. Just provide online access to the millions of references at one's disposal and the businessman (or woman) will log on to greater profit. Recent research at Sheffield suggests that it may not be so easy. The businessman in the small to medium-sized UK company has many other pressing concerns and his readiness to search for information and his willingness to use technology is somewhat blunted by the need to stay in business.

It is often suggested information use will lead to better business, the 'competitive edge', higher profitability On the basis of our research, we can suggest that businessmen will look carefully at that proposition and ask for *proof* that the claimed benefits can actually be brought about.

The business information user

Merely to survive in the business world, the businessman must have sources of information, and does have access to such sources. In some cases it is the financial pages of the daily newspaper, or more likely the *Financial Times*, in other cases it will be social acquaintances, the competitor contact who is willing to discuss the current downturn in business.

Aslib Proceedings, 39(10), October 1987, p 275–279 Printed in Great Britain

Business information needs are sometimes neatly categorised under headings such as, 'strategic planning', 'management control', and 'operational control' (e.g. Keen & Morton, 1978), and these headings are usually associated with different organisational levels in the business: top management, middle management, operational supervision.

However, our research suggests that these categorisations are much fuzzier in the real world than in theory, and the neatness of the classification disappears when one probes into the real information needs of businessmen. If one uses the 'natural' organisational divisions of production, sales, marketing, personnel, and finance, it becomes evident that different individuals pursuing different kinds of tasks within functional divisions, overlap quite significantly in their needs for information (White, 1986). This emerges quite clearly in our work. As part of the study of manufacturing companies 79 respondents were asked to grade the importance of different types of information in their work (White & Wilson, 1987). The results for two categories of information have been selected. marketing information, as representing the broad, strategic type of information, and financial information, representing shorter-term, control information.

TABLE 1. *Perceived importance of different information types by staff at different functional levels*

Level & info type	*Not at all important*	*Not very important*	*Important*	*Very important*
Strategic – F	11.6	20.9	48.8	18.6
Strategic – M	7.0	18.6	37.2	37.2
Operational – F	4.5	31.8	31.8	31.8
Operational – M	0.0	18.2	27.3	54.5
Financial – F	11.1	11.1	22.2	22.2
Financial – M	33.3	44.4	11.1	11.1

Note 'F' = Financial information, 'M' = Marketing information

Thus, *both* financial and marketing information are regarded as important or very important by people in both strategic *and* operational roles. The only group to fit the stereotype is the financial group. This suggests that the market for information is probably much bigger than may have been assumed. The qualitative results of the interviews support this statement. We found that people in all kind of roles needed all kinds of information, and that although some clear relationships between role and information type appeared, in general the picture was much more diffuse than proponents of particular models had suggested. In other words – the market is there, it is up to the information manager, or independent information broker, to foster the market and meet its needs.

In the case study project the significance of internal information was revealed in interviews with 19 senior executives in a major food-processing company. The interviews, covering all sectors of the firm, showed that of 18 information categories the following were regarded as 'very important' by 10 or more of the respondents:

Company general accounts
Stock levels in company
Delivery performance
Company targets
New product information

Again, the message for information managers is clear· for the majority of businesses, information means *internal information*. The management of externally generated information may well be of greater significance for R & D, but the day-to-day business of a company is seen to depend more upon the effective management of the internal information resource. This is the *real* challenge for the information scientist seeking to become an information manager.

In another investigation carried out by CRUS (Roberts & Clifford, 1986) which was concerned explicitly with external information only, the investigators noted that 'When presented with a list of types... of information, respondents indicated a spread of demand over all the categories provided ' The number of respondents (where N = 59) for each category of information is shown in Table 2:

TABLE 2. *Perceived need for externally produced information*

Information/data relating to..	*No. of respondents*
Marketing	27
Products	23
Exporting	22
Finance	21
Competitors	20
Patents	19
Production	16
Health/safety	13
Personnel	11
Suppliers	9
European Economic Community	6
Standards	6
Premises	4

Pointers to information needs which may already be filled by online databases or other information sources, but which are unknown to respondents, and, hence, where an information manager might perform a useful function were found in various comments. For example:

> 'The most difficult is good statistical information. For example, we receive import/export statistics for UK fibres. These are known to be inaccurate...'

> 'What we need to know is the size of the national market for... products so that we have an idea of our own percentage of the market. There is no adequate source of UK market information and this is where help is needed...'

In fact, almost half of the respondents were anxious for improved statistical services.

The point was made earlier, that respondents in these investigations might be unaware of sources of information outside the firm, or outside their own circle of personal contacts. Who is to blame for this? The answer that emerges fairly clearly from another piece of work is that schools of management and business in the UK must at least share the blame. A study by Roberts & Clarke (1987) found that external information sources are rarely treated systematically in the business schools. Although 'scanning the environment' is a buzz-phrase, *how* to do so is left to the imagination and ultimately the experience of the manager. Curricula deal to some extent with information *technology* and the application of software packages such as spreadsheets and DBMS, but the emphasis is more on the technology. The wider world of information is left untapped.

In particular, and of relevance to information managers, external information sources are virtually ignored and, in spite of the attention given to technology, this includes online information services. There is in this, of course, a message to information managers: if the market is to grow and if the demands for information which certainly exist in British business are to be satisfied, they must do a great deal more to take the message of information into the schools and departments of management and business studies. It may well be that Aslib and its members could do a great deal more to increase the awareness of managers through contact with and work in the educational sector than has hitherto been the case.

Nor can the schools and departments of librarianship and information studies be complacent: in an earlier investigation (Workshop..., 1983) we found that less than half such departments offered an option in business information, and I am not aware of any improvement in the situation. It is likely that even fewer have an option such as that at Sheffield (organisational information resources) which deals with the management of internally-generated information. There are difficulties, of course: shortage of financial resources, almost zero mobility of staff, and so forth, but if the management schools improve *their* teaching of the subject, the shortage of adequately prepared information staff is likely to be acute.

Conclusion

The studies reported here demonstrate that information needs in business can be explored by outsiders sensitive to the working situations of people in business. They also demonstrate that valuable information can be discovered, not only for the companies that participate, but also for the information providers. They also suggest that information management will remain a buzz-word until what we think of as the information professions come to grips with the real information needs of the business world and set about the design of systems that are better suited to meet those needs.

REFERENCES

Keen, P. & Morton, M.S. (1978) *Decision support systems: an organizational perspective.* Reading, MA Addison-Wesley

Roberts, N & Clarke, D (1987) *Information education in business and management schools.* Sheffield. University of Sheffield, Department of Information Studies, Consultancy and Research Unit. (In press)

Roberts, N & Clifford, B (1986) *Regional variations in the demand and supply of business information: a study of manufacturing firms.* Sheffield: University of Sheffield, Department of Information Studies, Consultancy and Research Unit. (CRUS Occasional Paper No. 13)

White, D.A (1986) Information use and needs in manufacturing organizations: organizational factors in information behaviour. *International Journal of Information Management*, **6**, 157–170

White, D A. & Wilson, T D. (1987) *Information needs in business: a case study approach.* London: British Library. (Forthcoming)

Workshop on business information needs Final report and background papers London: British Library, 1983. [Available only on loan from Document Supply Centre, Boston Spa]

NEW FROM ASLIB

let's have a CONFERENCE!

ELIZABETH LOWRY-CORRY

This comprehensive and realistic guide will help you to plan and run your conference successfully.

Practical advice is given on such areas as:

- accommodation
- finance
- marketing
- presentation
- the social programme
- documentation
- the exhibition

ORDER FORM

☐ Yes please, I would like . .. copies of **Let's have a conference!**
Price UK £17 (Aslib members £15), overseas £19 (Aslib members £17)

☐ Payment enclosed ☐ Please invoice me

NAME ______________ DEPARTMENT ______________

ORGANISATION ______________

ADDRESS ______________

____

______________ SIGNATURE ______________

Publications (Sales), Aslib, Information House,
26-27 Boswell Street, London WC1N 3JZ
Tel 01-430 2671

ISBN 0-85142-209-8, hb,
216 × 138mm, July 1987, 160pp

What business are we really in?

John A. Pickup

Albright & Wilson Ltd

What business are we really in? Why on earth do we need to ask such a fundamental question? Surely we have been around long enough at least to have grasped that basic principle!

Change and confusion

There again, perhaps it's not that surprising, for there has been change and there have been confusions. Ten years ago, the debates about roles and identities in our profession were about the differences between information officers and librarians. Even though this is still known to give rise to heated debate on occasion, it now pales into insignificance compared with the concern about all these other 'information' people who seem to have sprung up all around us. Over the last ten years, the talk has increasingly been of information technology which is going to revolutionise everything and if we are the information profession, then surely it should be revolutionising us or we should be revolutionising other people with it! At least we ought to be in control. But that isn't quite the way things have turned out is it?

Certainly information technology seems to be happening all around us, but that's just it, happening all around us far more than to us, or through us. Information technology was going to be the mechanism through which *our* information profession suddenly achieved all its objectives, but one is left with the uneasy feeling that whereas our information boat is bobbing along on a few minor ripples of technological change there are other currents and waves in operation which could suddenly sweep us dramatically off course. Even within the information profession though there has been change. From libraries, information officers have grown; special library services which originated primarily in the technical sector have broadened their roles into commercial fields, into desk market research, into competitor intelligence, into patent searching, into proactive information and intelligence services, and into 'information management'. Half the information staff seem to be programming computers now anyway! With so much change taking place, and no small number of confusions being thrust into the picture, there is every reason then for us to stand back and reappraise our role and identity, to make sure that we have our sights firmly fixed on the correct end objective.

The information profession – common threads

In trying, therefore, to define what our role really is, to define what business we really are in, we first need to define who 'we' are. At first sight the

Aslib Proceedings, 39(10), October 1987, p. 281–291 Printed in Great Britain

task of trying to draw a nice black and white dividing line round a group of people with such varied interests might seem daunting, but, given that you will allow a few sweeping generalisations, I do believe there are some clear commonalities which bind us all together as a coherent group. Even more, in terms of these common threads, our objectives can all be expressed in very much the same terms We all undoubtedly share involvement in one of the most basic activities pursued by mankind. Our common concern, put at its most simple, is the organisation and use of knowledge about the world in which we exist. What could be more fundamental than that? What more critical activity is there? As the philosophers and anthropologists will tell you, it is, after all, one of the activities which most clearly separate intelligent man, homo sapiens, from the rest of the animal kingdom. If your consult basic texts on the evolution of mankind, activities which distinguish man from his fellow animals are said to revolve around the use of spoken language, the use of tools and implements, and the use of written and pictorial symbols to record knowledge, enabling experience and learning to be passed on from one generation to the next. Now, interesting as it might be to debate this point, I raise it not to dwell on it, but to see where it leads. First, it shows very clearly that we have close natural links with some other professions, educators on the one hand – they perhaps are the most responsible for man's rise from the animal kingdom – and of course it was in the educational establishments that libraries initially rose to prominence. On the other side, there are also clear commonalities with the media, though from time to time their objectives seem to be open to question. Yet it is equally true that the original preserve of libraries and information units was exclusively 'published' information.

'Our' information – about the 'external' world in which we live

Perhaps more interesting is not what our role thus defined includes, but what it excludes. I have talked particularly of knowledge of the world about us, which might at first seem all embracing; but let me sharpen that definition a little. The objective of information managers is the management of knowledge about the world in which they or their organisations operate, as opposed, that is, to information about the operations of the organisations themselves. This can be seen most clearly in industry where, in most cases, there is a clear separation between, on the one hand, the information function, which provides information on the outside world, on markets and on science and technology, and, on the other hand, the accounts function, which provides information on the company's own sales and costs. This distinction can be seen also in the public library sector, for example, where information provided to the library user is likely to be about the world in which that person lives rather than about the user's personal affairs, income, expenditure, whatever

In academic libraries too, the information provided is from, and about, the outside world, rather than about the finances and administration of the university.

'Internal' vs 'external' data – comparative features

Since we seem to have this clear division, let's pursue it further, and because it provides perhaps the clearest example, not to say because it is the area I know most about, let us look particularly at the industrial model. Here then we are drawing a distinction between information on 'internal' matters, about a company's internal workings, about the sales it makes and invoices, about raw material purchases, and about the day-to-day operation of its own production plants, as opposed to information on 'external matters', about the world in which it operates and tries to grow and prosper, comprising, for example, its markets, its competitors and the science and technology of its products. Analysed on this basis, not only are there distinct differences in the subject of the 'external' information handled by 'our' information function on the one hand, and the 'internal' information handled by the accounting and EDP (or should we call them MIS?) functions on the other, there are also real differences in the nature and structure of that information (Table 1). Note most carefully, however, that we are differentiating between 'internal' and 'external' information only according to its subject matter and content, not according to its origin, e.g. whether published (external) or private (internal). For our purposes, this latter is largely irrelevant.

TABLE 1. *Comparative features of data about*

Internal operations	*Outside world*
Numeric	Textual
Structured	Amorphous
Source controllable	Uncontrolled
Regular	Irregular
Concentrated	Dilute
Finite	Infinite
Explicit	Context dependent
Fact	Less than fact

In general terms, it would be true to say that internal operating data tends to be predominantly numeric, whereas data about the outside world tends to be textual. Internal operating data tends to be highly structured, partly because the generation of such data is under the control of the organisation itself. On the other hand, data about the outside world is inherently amorphous, and the using organisation has essentially no control over the source, or the channels through which it becomes available. Further, internal operating data tends to be produced in a regular and predictable flow, but the appearance of new data of interest in the outside world is irregular and unpredictable. Essentially all the data generated by an organisation is relevant at some level to its activities, whereas the proportion of the total world fund of knowledge relevant to any single organisation is minute, representing a dilute and dispersed resource. Even more significantly, the total collection of internal operating data is always essentially finite; there are only so many sales, so many invoices, so many items on the payroll. But the total fund of knowledge available in the world is essentially infinite. Being highly structured, numeric, and controlled at source, the meaning of internal operating data is usually explicit and self-evident, but information about the outside world is usually highly dependent on context and source Taking this a stage further, internal data is primarily factual, even though management might argue about the implications of these facts. Data about the outside world is often less than factual, for we have to consider not only the technical sphere, where most information is published in good faith, but also the whole range of economic, commercial and political information which ranges from facts, through opinions to half-truths, propaganda and downright lies.

Looking, then, at the respective tasks of the accounting and MIS functions on the one hand, and our information function on the other, it seems to me that they have got the easy job, and we've got the hard bit. Yet, paradoxically, in most organisations there are many more accountants and EDP people than information professionals.

Uses and impacts

To understand how such iniquities come to be perpetrated needs further deliberation. Consider the main ways in which the two different types of information are used, briefly summarised in Table 2.

TABLE 2. *Main uses of information about*

Internal operations	*Outside world*
Decision making (primary)	Decision making (secondary)
Monitoring – for control	Monitoring – for spotting opportunities and threats
Awareness	Awareness
Analysis – better performance	Problem solving
	Innovation

One of the most important uses of information is in decision making, and both operating data and data about the outside world bear on such decisions, but I have to suggest that in the average industrial organisation, decisions are taken, rightly or wrongly more on internal operating parameters than on analysis of the outside world.

A second major use of information, this time newly issued information, is to monitor changes. In the case of internal operating data, this is monitoring changes in the organisation's activities and performance whereas in the case of external data, this becomes an attempt to identify far more remote opportunities and threats. In both areas, newly issuing information is used to maintain the essential 'awareness' which guides management's every action.

Now, however, we come to an area of substantial difference; analyses of internal operating data, whether as part of the monitoring or decision making process can be turned immediately into direct action and control of the business. If plant efficiencies go down, causes can be investigated and adjustments made; if sales fall below budget you can kick the salesman, and if raw material costs go above budget you can argue with the suppliers. Unfortunately there is no such easy way of controlling the outside world. Certainly, from time to time, influences can be brought to bear and choices made, but in general the impact of external information is far more indirect and remote. However, external knowledge does come entirely into its own in two related areas – problem solving and most importantly, innovation.

Looking at this list, there is again more than a suspicion that the information profession is responsible for the more difficult area, certainly when one considers the crucial process of innovation, on which the whole of man's progress and development depends. Further, I think we also see the crucial difference which explains the different priority assigned to the two areas. Generally speaking, internal operating data is concerned with things which have a direct impact upon the organisation. Not only that but they very often tend to have short-term or even immediate impact. On the other hand, although there are exceptions to every rule, what happens in the outside world tends to have a more remote impact, which is more indirectly felt, and very much longer term.

In summary, internal operating information has a high impact. Organisations which fail to sell enough, or which let their costs get out of control, which fail to control cash flow or working capital, can run out of money, and go out of business in a spectacularly short space of time. Organisations which merely ignore what the world outside, what the competition is doing, which fail in solving problems or developing new ideas face only a gradual, though nevertheless inevitable, decline into oblivion. Here quite clearly then is the reason why so much effort is expended relatively speaking or handling internal data and lo and behold, isn't that where all the information technology is going. In general terms information technology is being applied to information of high impact, or more precisely to information of short-term impact; but it is also being applied, as we saw in Table 1, to essentially easy information handling problems.

Information technology – not the complete solution for 'external' data

Now the reason this is so is not just a question of impact, although it is regretably true that it is an easier option for management to seek short term performance improvements through day-to-day adjustments and tactical manoeuvres, through sales drives and cost cutting exercises than it is through strategic development, through solving problems, spotting opportunities and developing new ideas. Nor is it simply a question that much information technology is indeed being implemented purely for modest improvements in cost efficiency, e.g. in the introduction of word-processing, thus seeing greater application simply because there are more jobs to automate. No, the most fundamental reason is that new information technology as it is so widely publicised, is, of itself, only capable of handling relatively simple sets of data, typically internal operating data which is highly structured, finite, explicit and factual.

Before the problems of our information profession will be solved, I do believe that we need to develop what I can only describe as 'new information science'. True, there have been improvements in systems for handling our kind of information, amorphous, textual, infinite, dilute collections, but, in the main, many of these have simply been improvements in speed and logistics directly attributable to new information technology. There has not been, nor is it easy to foresee, immediate or dramatic improvement in our ability to focus on the meaning and impact of textual information, to sort the critical from the trivial, the needle from the haystack. As always, there is an exception that shows the truth of this statement. Stock-market, commodity trading and investment information systems have been revolutionised by new information technology, and it could be argued that they are handling data about the outside world, but equally the nature of the data is far more typical of internal operating data in that it is numeric, precise, factual, structured and finite.

Where, then, does all this leave us, and our information profession? It certainly leaves me with the feeling that there is a big tidal wave going past, and not one of our making. If we are ready for it and time it right and understand which direction it is travelling, perhaps we can surf along the crest and achieve tremendous progress. If we get it wrong, we could be shipwrecked. To understand how best we can ride this technological wave, we have to look back to our fundamental objectives, helping our various organisation or client groups progress through the exploitation of available knowledge.

Our role – managing information from acquisition to impact

We can view our role in life, and the business we are in as bridging a gap; a gap that exists between the source of information and the user. Call it an information gap, communication gap, understanding gap; it's all of these. The information resource falls into two categories, each of which is used in different ways. On the one hand we have the world's total accumulated fund of existing knowledge; let's call it 'existing information'. It has very usefully been referred to as the 'data-heap'. Yet, pouring into this incessantly, off a 'conveyor-belt' as it were, is 'new information'.

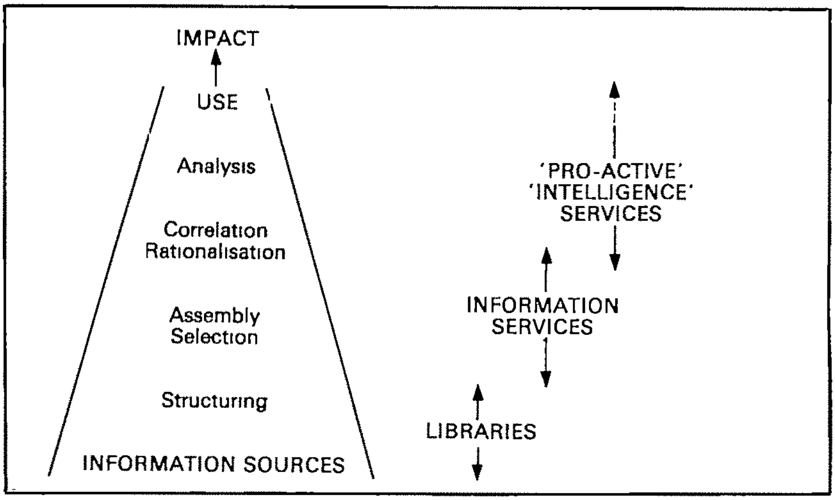
Existing information tends to be useful primarily for decision-making and problem solving, whereas new information tends to be used primarily for spotting opportunities, identifying threats and generally maintaining awareness of a changing situation. Naturally there is interplay between the two, but we are unlikely to solve many problems by simply waiting for a useful fact to roll along the 'conveyor belt'. The answer is more likely to be found in a systematic exploration of the 'data-heap'. Similarly, opportunities and threats will largely be identified only from new information. But in both cases there is a great deal of work to be done in processing the information between its source on the 'conveyor belt' or 'data-heap' and its eventual use, because by use I mean the point at which it makes an impact on what the user organisation does, the point at which it influences a decision, the point at which it solves a problem. Decision making, for example, involves rationalising a vast number of individual facts, correlating, analysing and reducing them to bare essentials until only one piece of information, a yes/no decision is left. Information services which support decision making are thus mission oriented, and depending on the magnitude of the decision, can be relatively long term operations. Problem solving on the other hand needs ad-hoc availability of information. Ideas and questions arise unpredictably in the user's mind. Ideally these should have instant answers, so as not to disrupt the train of thought. The best we can currently hope for is a well organised collection of information to maximise the speed of response. In contrast, spotting opportunities and identifying threats involves monitoring the contents of the 'conveyor belt' and selectively identifying just those few pieces of information which suggest that a change has occurred which will have an impact on the organisation. This then needs appropriate communication and emphasis to ensure action by the relevant executive staff. All of these processes involve reducing, by analysis or selection, the total fund of world knowledge to the few facts which matter in each particular case.

The process of information use, from acquisition to impact, can thus invariably be depicted diagramatically, as in Figure 1, as a tapering, narrowing, focusing, transition.

If we ask ourselves the fundamental question posed by this paper, 'What business are we really in?', in relation to this diagram, unquestionably our real role and responsibilities should cover all of this diagram; we are responsible for managing all of these processes.

We may not be responsible for making the decisions, nor independently capable of solving the problems, and indeed in many cases we only handle half the information anyway, since the internal operating data is usually the prerogative of others. But in every other respect, we must judge our success or failure by the efficiency and effectiveness with which our employing organisations or client groups can move knowledge across this information gap, from unspecified sources to the brains which can use it.

FIGURE 1 *Information processing from acquisition to impact*



Our real responsibilities – how fully are we addressing them?
Taking the funnel in Figure 1 to represent the total necessary processing of information, two questions arise. First, how much is our profession currently addressing, and how well are we doing it? Regretfully, I think the answers are 'precious little', and 'pretty superficially', respectively.

Many of the processes of information use can be seen to comprise similar stages. At the bottom, close to the source, we have the initial structuring, selection and assembly of information, indexing and retrieval. Next we have assembly of relevant information, in some coherent form. Very often this requires rationalisation and correlation, particularly with commercial information, where many conflicting pieces of data confuse the picture. All these must be resolved before the final analysis can begin, and only after all this can the information have any real and soundly based impact on the using organisation. If we now attempt to measure the information services and facilities with which we are involved against this total process, the nature of the gap and the shortfall becomes all too apparent. Libraries, for example, deal only with the bottom end of the spectrum; true the amount of information covered is enormous, but the degree of structuring and mobilisation towards its end purpose that libraries can contribute is minimal. Bibliographic databases fall into the same part of the spectrum. Next along the line, feeding off the libraries and databases, we have the information services, searching services, alerting services etc; and yet all that these do is complete the structuring or selection process, and possibly begin assembly. Yet at this point we must also remember that *our* sources will probably not contain all the relevant information Invariably, there will be non-documented information, or personal expertise for consideration as well.

Nevertheless, further up the focusing process, an increasing number of organisations do take the job further, conducting rationalisation, correlation and even analysis, but in terms of the total decisions to be taken by an organisation, or the total number of problems to be solved which could benefit from the application of existing knowledge, not to mention opportunities and threats which are there to be identified, such activities within our profession represent only a few microscopic spikes of activity towards the real goal at the top of the funnel. Only in a few idealised cases does the information function leave the user with nothing to do but to make the decision, or respond to the threat or opportunity. In the overwhelming majority of cases the user has to do much of this preparatory information processing by himself. The consequence is that in most organisations, a tremendous slice of staff and management time is unconsciously devoted to handling this processing mentally, ad-hoc rather than systematically.

It is an enormous challenge to our profession to release this staff time to its proper purpose, to decision making, problem solving and executive action, rather than being frittered away establishing the basic facts.

Scientific versus commercial information

I think it is also worth drawing the distinction at this point between the extent to which we have progressed on the one hand, in the scientific and technical information field, and on the other hand, in the commercial or related general fields. If we compare (Table 3), as we did before, the key features of scientific data versus commercial data, we see there are again clear polarisations.

TABLE 3. *Comparative features of scientific and commercial data*

Scientific data	*Commercial data*
Systematic	Anarchic
Well organised from source	Random
Scrutinised	Uncontrolled
High impact on main user	Lower impact on main user
Needs expert to use	Understood by layman
Longer term impact on organisation	Short term impact on organisation

Recognising of course that these are sweeping generalisations, scientific information is usually systematic and well structured by its very nature and as a result of its origins. The channels by which it is published and disseminated tend to be relatively well-organised right from the source. Further, there is a serious attempt to scrutinise new contributions, through journal refereeing systems and the like, to exclude spurious or ill-founded data which might confuse the picture. Consequently, technical information in the main attempts to be factual and accurate, or at least a sincere opinion.

In contrast, commercial information is usually anarchic. Sources and channels of publication are primarily profit-driven, rather than altruistically motivated. All too often the content of the commercial press degenerates into half-truths, lies and propaganda, and the object is to persuade or influence, rather than to inform or discuss. One final difference between the two is that scientific information does have a high importance and impact on its main user group, the research community itself, which also often controls the purse strings of the research information service. Conversely, we have already seen that commercial information on the outside world is often seen to be of secondary or background importance compared to internal operating data. This, then, explains another feature of the position to which the information profession has progressed to date. Scientific information led the way, and had the greatest allocation of effort. The reasons parallel those underlying the ascendancy achieved by internal operating data over external information. Scientific data is inherently easier to organise. There is a strong appreciation of need, at least by the group which controls the purse strings. Commercial data tends to be difficult to structure and rationalise, and often incomplete, since commercial managers have often jealously guarded private sources of market intelligence, leaving only low-quality published data in the hands of the information function. Only when all this private information is included will the picture be sufficiently complete to have a sensible impact on commercial decisions and problems. Yet it is in the commercial field that the greatest progress has been made in information units with analysis right to the point of use, taking over the erstwhile role of desk-market researchers. This, I suggest, is largely because the analysis and assessment of scientific information requires scientific expertise, and needs to be complemented by data from experiments for problem solving and innovation. Commercial information is far more capable of being understood in depth by the lay person. But significantly, when we assess not just the local impact, but the total impact of these types of information on the organisation, commercial information in its widest sense has the greater and shorter-term potential impact.

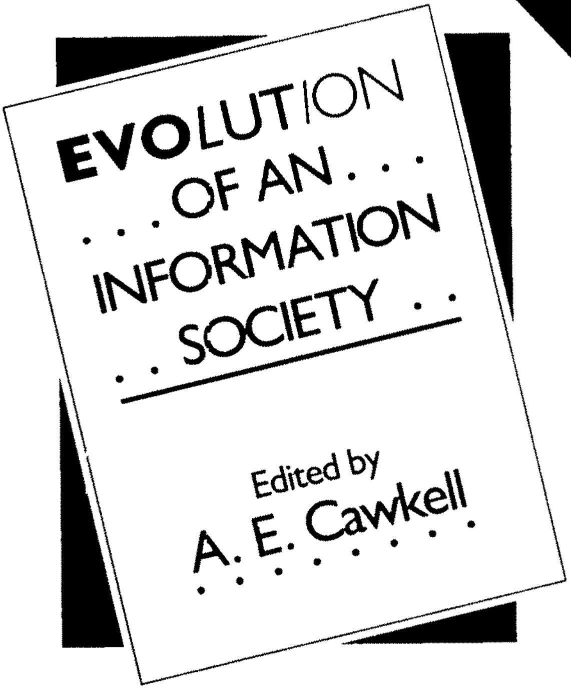
Summary

The business we are in is nothing less than the support of the continued progress of mankind and civilisation, by making possible the effective use and application of the growing fund of knowledge about the world in which we exist. Whether we serve organisations in industry or academia, the private or the public sector, we all share this objective. The primarily textual, amorphous, infinite and imprecise nature of the information resource we need to organise gives us all an overwhelming interest in promoting the development of a more advanced and effective information science than that on which our activities are currently based. I can only describe it as the science of information use, rather than of storage and retrieval. Until this becomes a science, perhaps we need to treat it as an art. We need to bridge the gap between our current systems, and the point of use, with people, not with computers, by intellectual processing rather than by mechanical processing. Information professionals must strive to stand in the shoes of the user, and to see things from his point of view, with his priorities and pressures.

In this process, information technology is potentially a great ally, but I suspect that even now we have more than we know how to use. The capacity to store and transmit information far exceeds our ability to select, rationalise, correlate and analyse it We must continue with the process of using information technology to automate that which previously had to be tackled manually and/or intellectually, and we must then move further up the information processing funnel, towards the end user, to tackle new problems, where the basis of information science to permit automation does not yet exist. Otherwise, the dreaded Doomsday will come, and the organisation will automate us.

The application of information technology to internal operating data by other information people will continue. Correctly judged, we can ride on, or at least ride out the wave that it will create in our organisations. We must beware that we do not suffer from a management which can all too easily see information technology as 'the answer to all problems, for all time', being first preoccupied with it, and then disillusioned by it. The challenge is there, as great as it ever was. Information technology is creating turbulent times, but it is creating opportunities in the process. As long as we set our sights on the correct and clearly defined objectives, taking careful note of the message contained in the title of this annual conference, urging us to be adaptive information managers, then, though the detail of our activities will surely change, the information profession to which we all belong, will thrive and progress.

NEW FROM ASLIB



EVOLUTION
. . . OF AN . . .
INFORMATION
. . SOCIETY . .

Edited by
A. E. Cawkell

An anthology of important literature on the evolution of an information society, containing extracts from such classics as:

- ★ H. G. Wells' *World Brain*
- ★ Arthur C. Clarke's *Extra-terrestrial relays*
- ★ Claude Shannon's *A mathematical theory of communication*
- ★ Manfred Kochen's *New concept of an information society*

Essential reading for those interested in the ideas, concepts and technological advances that are shaping our society.

Price: UK £35 (Aslib members £29.50); overseas £39.50 (Aslib members £35)

Aslib

Publications (Sales), Aslib,
Information House, 26-27 Boswell Street,
London WC1N 3JZ.
Tel: 01-430 2671

ISBN 0-85142-211-X; hb
234 × 156mm, 320pp
September 1987

A bigger slice: cost justification for library and information services

Neil McLean

Polytechnic of Central London

Libraries, as distinct from information services, have built their existing reputation primarily on their ability to acquire a broad resource base of books, journals and grey literature in advance of demand in order to meet as many demands as possible. Size of collection has always been an implicit measure of success both in the eyes of fellow professionals and in the eyes of the parent body. The acquisition and maintenance of such collections demanded a high proportion of fixed costs and most justification centred on incremental adjustments arising out of inflation costs or the need to provide a larger resource base. This general approach to the costing of traditional libraries has been common to both the public and private sector irrespective of the size of the library involved but it is now under severe challenge for a number of reasons.

- The competition for resources has increased dramatically within both the public and private sectors. Libraries can no longer so easily rely on conventional justifications for maintaining and developing their services.
- The application of information technology has increased the possibilities for information access, challenged the traditional means by which information can be delivered, and altered the organisational/power structures in most organisations.
- Arising out of these developments, libraries and information services are being forced to compete for resources on equal terms with other parts of their respective organisations which means adopting at least some of the business techniques used elsewhere in the organisation.

A manager's viewpoint

From the library information manager's viewpoint, life can look rather bleak in the face of these challenges and a number of practical problems can be identified. In many cases there is an inbuilt assumption amongst library staff management and users that a large collection of readily available material is desirable. The struggle to reduce such commitments in a planned manner proves, therefore, to be exceedingly difficult as there is always some member of the organisation who can think of a good reason for retaining particular books or journal holdings. Whilst it is relatively easy to produce figures on the costs of acquiring the material and on the

Aslib Proceedings, 39(10), October 1987, p 293–297 Printed in Great Britain.

cost of maintaining it there are difficulties in justifying the cost/benefits of retaining such a base. Incremental budgeting is still the 'norm' in most of the public sector and I suspect it remains prevalent in much of the private sector as well. Given this, library and information managers are reluctant to expose themselves to new costing techniques because they have an identifiable asset which is most easily axed in the face of financial adversity.

The growth of the free public library service and its influence on library and information services in other sectors means that users place relatively low value on the receipt of information. There is, therefore, a constant battle in reconciling the cost of provision with the price that users or the organisation are willing to pay. These resource and attitudinal constraints militate against the development of new or enhanced services which often require additional capital funding, at least in the initial stage of development and, thereafter, revised cost/pricing structures to sustain their viability.

It is clear that these resourcing difficulties cannot be divorced from the organisational and political changes arising out of the application of information technology. Librarians remain unchallenged in their role as controllers of physical collections of information but the rapid growth of electronic access means that users can potentially access a range of information services directly. The growth of computing services and office automation has enhanced the capability of other parts of the organisation to take over the role of information provider/manager.

Experts and their advice

There has been marked improvement in the application of cost accounting techniques to library and information systems. As Schwuchow says cost accounting should essentially accomplish the following tasks:

- Specification of the cost structure, i.e. the way in which the total annual budget is composed of the various types of costs (employment costs, equipment costs, cost of materials, etc.) and how it is distributed over the particular operational functions (acquisitions, indexing and abstracting, storage, search service, SDI service, administration, etc.).
- Supervision of the efficiency of individual operational functions and activities.
- Provision of material for the calculation of e.g. the prices of different kinds of I & D services (retrospective searches, SDI services, abstracting services, bibliographics, databases etc.).
- Provision of decision-making aids dealing with the question of whether to carry out certain operational functions and services within the system or whether to farm them out.
- Performance of comparative calculations among systems.
- Provision of material for forecasting costs in planning new or reorganising existing I & D systems (cost indices).(1)

He goes on to observe that practice does not live up to these objectives and whilst the article was written in 1977, the observation would remain valid in the UK in 1987.

There are numerous examples of costing inputs to library and information systems but little understanding of how changes in inputs affect services and hence outputs. This raises the more difficult questions relating to cost-effectiveness and cost-benefit, two terms which continue to cause endless methodological confusion for practitioners. Gilchrist(2) quotes Lancaster as identifying the different means of evaluating an information system in the following terms:

— How well the system is satisfying its objectives, which will usually mean how well it is satisfying the demand placed upon it. Here we are evaluating the effectiveness of the system.
— How efficiently (in terms of costs) it is satisfying its objectives. This is cost-effectiveness evaluation.
— Whether the system justifies its existence (i.e. the system worth). In evaluating system worth, we are concerned with cost-benefit relationships.

As evaluative techniques they are quite explicit but few managers have been able to apply them in a comprehensive manner to their library or information system. This is partly because the gathering of sufficient comparative data is difficult (and may be less than cost-effective in itself) and partly because performance measures are intrinsically related to the perceptions of users. They are not, therefore, panaceas in themselves but nevertheless as Gilchrist(3) concludes:

> 'Aiding decisions by the use of cost-benefit and cost-effective analysis is important to the librarian for two inter-related reasons – justification and resource allocation'.

It is the realisation that library and information services will have to compete in a more dynamic and hence fluid environment that has led to a growing interest in a wider contextual analysis. Inherent in this view is the concept that libraries will have an increasingly important role as facilitators in providing information access/delivery. David Penniman of AT & T Bell Laboratories presented an informal paper on this subject at a recent joint UK/US/Canadian seminar based on the thesis that a business plan is essential in which information services and products have a measurable value.(4) He contended that this will lead to a repositioning of services, a change in the infrastructure of the organisation and a transformation in the skills required to lead such an enterprise. He admits, of course, that there is no easy way of transforming from one philosophy to another. Of central importance is the determination to place all services and products in a competitive context i.e. what are the alternative means of providing and delivering the desired services. Apart from organisational analysis there would be a far greater emphasis on competitive analysis, institution wide analysis and market analysis. In summary, the organisation is to be justified by quantitative assertions in which the resources used, the outputs and the productivity can be measured.

As a library manager I accept the power of his argument but it leaves a great deal to be done in producing appropriate output and productivity measures. Few, if any, of the results published so far relating to these two measures carry great conviction.

The way forward

It seems necessary to accept a number of basic assumptions in moving towards this cost-conscious environment:

1. That library and information services have little alternative but to compete in the electronic information environment.
2. That the political importance of being seen to compete openly will be an important element in resource winning.
3. That there will be inevitable risk to existing traditional services in adopting this strategy.
4. That it will be essential that the library and information systems be an integral part of the information systems of the parent organisation in order to share technical access to internal and external information sources.
5. That there will need to be a greater emphasis on segmenting and analysing the potential needs of the user population being served.
6. That strategies must be closely allied to the goals and objectives of the parent organisation to provide coherence and credibility in the eyes of decision makers.
7. That a constant analysis of management objectives will be essential to ensure that the library can compete in this more open fashion.
8. That successful competition will depend on the ability of library/information services to produce measurable data on products and services which is at least as good as other parts of the organisation.
9. That this work should be carried out within the institutional financial analysis systems and not as a separate exercise both to save time and effort and to avoid being alienated.

I know, as a library manager, just how far I am away from having made explicit all these assumptions in my own library. There will be those in the audience who operate one-man-band libraries who will no doubt feel greater trepidation than I do about the practicality of adopting such an approach. There is no overnight success to be conjured out of existing costing techniques and much of my argument rests on the importance of creating a favourable political climate. This can be done by us all without specialised techniques.

The first essential step with respect to costing information is to ensure that there is relevant data on existing inputs relating to staffing materials, occupancy and other administrative overheads. Without such information the library and information services are vulnerable to attack on all fronts.

The second most important step is to demonstrate to decision makers that the process of creating adequate financial analysis in this new environment is a long path, as has been acknowledged already, and we will all need more practical guidance from economists and accountants in analysing our particular activities. We also need organisations such as Aslib to take a more active role in producing costing techniques packages that will be applicable by library and information managers who do not have either the expertise or indeed the time to develop such techniques for themselves. But in doing so we should all remember that success is as dependent on political persuasion as financial persuasion. In the absence of comprehensive financial analysis we should concentrate on applying the techniques to strategic elements where change is imminent. This will show a willingness to compete, and to build the foundations for a more concerted development of a business plan.

REFERENCES

1. SCHWUCHOW, WERNER The economic analysis and evaluation of information and documentation systems. *Costing and the economics of library and information services* edited by Stephen A Roberts. Aslib, 1984. pp. 26–27
2. GILCHRIST, ALAN Cost-effectiveness. *Costing and the economics of library and information services.* Op. cit. p. 268.
3. GILCHRIST, ALAN Ibid. p 270.
4. PENNIMAN, W DAVID. Preparing libraries for a competitive environment. Unpublished paper prepared for a joint UK/USA/Canadian seminar held at the Selsdon Park Hotel, England, 1986.

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

Professional
Recruitment
Limited

Leadership as a resource – interpersonal skills

David Feldman

Industrial Society

My theme under the heading 'Leadership as a resource – interpersonal skills' will focus attention on recognising, developing, constructing and resourcing a major, albeit often unrecognised, and apparently intangible, factor in the success or failure of 'adaptation': the skills, perseverence and abilities of 'leaders' to guide, see, support and motivate people through change. There is, of course, nothing new in change, although perhaps it would be true to say how the pace of that change has increased in recent years. Indeed, it surrounds us at this conference in the changing world of information retrieval – a long way from philistines such as myself who refer to 'librarians' and visualise piles of paper, rubber stamps and dusty archives. Far removed from the key resource we now represent *within* organisations for the competitiveness and dynamism of the organisation itself. I have in mind the 'Big Bang' mentality of the city, or the competitiveness of industry and commerce, where information is increasingly knowledge and knowledge aids decisions, and decisions create action and management policy. And those who get it right in our competitive climate will survive and prosper – others will not. Adapting to change is not new. I am reminded of a quote:

> 'We trained hard, but it seemed that every time we were beginning to form up into teams we would be re-organised. I was to learn later in life that we tend to meet any new situation by re-organising and a wonderful method it can be for creating an illusion of progress while only producing inefficiency and demoralisation'.

This was not written from within one of our large organisations but in AD66 by a Roman General, Petronious Arbiter. Nothing is new. But if adapting to change is not new it brings with it requirements for 'the leadership resource', because of the implications of change on those who work for and with us. It is, for example, fear of change and lack of communication that affects customer service at the sharp end in, for example, a big bank with its cash machines. When an annoyed customer complains to a bank clerk of an empty machine, does that clerk defend the new technology or criticise the system? Without clear leadership and communication, it is often the latter. Indeed, as this example suggests it is often not simply a case of improving the leadership at the top (albeit this is necessary), but recognising the needs of good leadership in the middle management of organisations or at supervisory levels. No matter

Aslib Proceedings, 39(10), October 1987, p. 299–301 Printed in Great Britain

how good the culture of organisations, the conditions and the macro systems of participation, e.g. Marks & Spencer, IBM or the John Lewis Partnership, it is the immediate 'boss' who can motivate or demotivate at the front line. It is *our* responsibility as leaders that will create results.

Small groups of professionals and specialists, within large organisations, have to recognise the requirements of staff to be led effectively (even if they are so-called 'self motivated' academic and professional staff – a dubious concept in itself). However, it is true that in our sort of circumstances, recognition of the leadership role may well require a shift in old attitudes of mind. Recently, at the BBC, I was told quite clearly that those with creativity, flair and brains were wasted in 'management', which was perceived as administration and bureaucracy. In the Health Service 'professional' staff resist a leadership or management role ('I joined the Health Service to care for people – not to manage').

This perception is understandable, but take from it the vital need to overcome the barriers to understanding leadership which confront the specialist/professional mind, which is:

- not concerned with certification/qualification;
- not totally measurable but is judgemental (or is it?);
- not necessarily consistent with professional and technical skills and may impact on status or career progression;
- not about Nobel prizes and learned papers, but about hassle, loneliness and stress;
- a multi-skilled, multi faceted, jack-of-all-trades profession, with no right answer – and thus offends the specialist mentality which is looking for rules.

Our role today is not only to recognise the challenge, but to take the first step in an awareness that leadership is a demanding and vital vocation. By training and development, and a simple, practical approach, leaders can be developed. Leadership is *not* 'enabling' or 'facilitating' but 'calling forth the gifts'. It is demanding physically, emotionally and intellectually but it depends, above all, on what we as leaders do with, and for, our people.

The history of leadership development is littered with sophisticated theory and 'motherhood' statements but has come a long way in recent years from emphasis on styles, qualities and attitudinal change to a focus on functional leadership – what you and I can do at work to get the best from people I commend to this conference the work of John Adair on action-centred leadership and the work of the Industrial Society in this field. The following table outlines some of the actions required by leaders at all levels.

People matter in any organisation. All resources are vital but the leadership resource matters most because leadership affects what people contribute, and what people contribute affects results. The chief executive of a large organisation said recently 'there is no level of poor performance that cannot be reached by any individual or group of individuals given sufficient lack of encouragement'. I wish you all well in your role as leaders.

Industrial Society guide to team briefing

TEAM BRIEFING

Face to face – encouraging questions and ensuring understanding

In teams – between 4–15 people.

Team leaders – briefing their people. They who communicate lead.

Regular – at least once a month for 30 minutes with dates set well in advance

Relevant – the leader of the team providing local items on progress, people, policy and points for action – with some general information

Monitored – by managers walking the place of work, asking questions, sitting in on briefings.

How I prepare

1. Put items in my briefing folder during the month
2. Go to my briefing with my own local brief already written.
3. Add the relevant matters from my team leader's brief to my own local brief.
4. Ask questions to ensure I understand. Cover the points my team need to know about.

When I brief

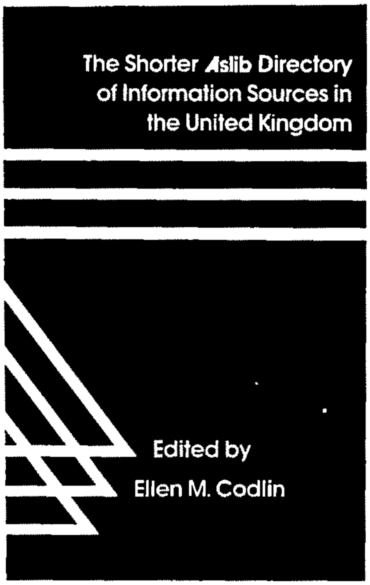
1. Plan what I want to say and keep it simple.
2. Use examples and make the message relevant to my team
3. Keep to the subject. Encourage questions on the information briefed.
4. Remember I am briefing the management view.
5. Record questions I cannot answer and then get the answer back to the questioner
6. Brief absentees immediately they return to work.

Subjects

1. Progress – the regular yardsticks of how my team is doing against target, quality standard, etc. Highlight good performances
2. Policy – which procedures, policies or decisions that affect my team need to be explained or re-emphasised.
3. People – are there any items that affect my team.
4. Points for action – what are the priorities for the month – what can we improve on; do any procedures, drills need to be explained.

THE FAST AND EASY WAY TO TRACK DOWN INFORMATION

Concise, comprehensive and authoritative, The Shorter Aslib Directory is the ideal single source reference tool for librarians, journalists, students, writers and researchers of every kind, and anyone whose catholic tastes incline them to journeys of discovery through its pages.



The Shorter Aslib Directory
of Information Sources in
the United Kingdom

Edited by
Ellen M. Codlin

*Full entries with lists of subsidiary bodies and branches, where appropriate.

*A comprehensive and cross-referenced subject index.

*Cross-referencing in the main body of the text.

*An index of abbreviations.

*The title of the person in each case to whom application for information should be made.

*The inclusion of both telephone and telex numbers for each entry.

The Shorter Aslib Directory, edited by Ellen M. Codlin, is available from Aslib and costs £60 (£65 to overseas customers)*. Send payment to Aslib Publications (Sales), 26–27 Boswell Street, London WC1N 3JZ.

*£10 discount to members of Aslib.

254 × 160mm; 1986; viii, 590pp
ISBN 0-85142-199-7, hbk.

Aslib

Information, strategy and people

Jef Mason

JMA Management & Organisation Consultants

In many organisations the information manager is required to produce a strategy, usually to justify demands and to ensure that technological and organisational issues are thought out. What about the corporate leaders to whom the information strategy is presented? Have they presented their strategy to the stakeholders of the organisation? Have they got a corporate strategy worth the name? They may have a list of wishes that they would like to see come about, financial or other targets they would like to hit, but have they identified clear points of focus, market segments or service priorities and worked through what needs to change to make the organisation achieve these aims? If the organisation does not have a sound clear overall strategy, the information strategy is an orphan likely to be discarded or disowned at any moment. But the information management function has a key role in the creation of the corporate strategy.

Why does an organisation need a strategy?

In the 1950s and 1960s corporate planning was the name of the game – extrapolation, finding the trend lines, progressive product development, incremental improvements in technology and in productivity. In the 1970s economic assumptions started to crash. I was working on a new model of the UK economy and I was horrified because it forecast over two million unemployed by 1983. The sudden changes in the economic environment, which were not predicted by corporate planning, brought it into disrepute and the large planning departments were disbanded. But without understanding and taking account of the environment they are in, organisations fail to take opportunities and falter under pressure from new trends. Corporate strategy is needed to identify the emerging trends and relate them to their business or organisational plans.

In the 1980s there are several clear trends across the economy in the UK and the developed world. The following are some examples of trends which the information manager can use to demonstrate the need for a clear but flexible strategy in a time of discontinuities.

Privatisation

Governments are privatising in many areas. In Britain, the list includes road haulage, resource industries (oil and gas), the transport industry, the automotive industry (Jaguar, Unipart), banking (TSB), airlines, dockyards and telecoms. There are likely to be more – steel, coal, Austin Rover, waterboards and the Post Office. With privatisation come opportunities

Aslib Proceedings, 39(10), October 1987, p 303–312 Printed in Great Britain

for competing in previously restricted markets, and new competition in existing markets. BR put out to tender repairs to locomotives worth up to £250 million because BREL are being privatised. A double decker bus body builder in the north has found that their market has disappeared with privatisation and they have had to turn to the minibus market.

Deregulation

The now deregulated public transport industry is facing the biggest change for many years. In the City perhaps 75 per cent of business now commission free in the stockmarket; most of the market makers are admitting to losses. No one appears to be making money in equities except investors. Telecoms now allow you to buy your own phone. Soon the smaller company will be able to choose competitive phone systems. Already 700 extra frequencies have been allocated to car phones. There is clearly huge growth in the information/financial/electronic services field. Conveyancing has halved in price and is often included in the agents fees, lawyers and agents are combining and the financial institutions are buying into the market. Building societies can sell insurance and financial services. Car companies are in the loan business – the fastest growing bank in the US is owned by Ford. In the UK, all Mitsubishi dealers have a sales target, not just cars but mortgages. Oil companies take in huge amounts of money then pass it to the bank – soon they will want to take over the profits in handling it. In the next decade the airwaves may be fully deregulated. Television and radio and advertising will be profoundly changed.

Forecasting

Economic expectations have shown to be vulnerable but we cling to them in naive hopes of certainty. The developed world expects growth of 2–3 per cent but there is a Third World debt bomb and the banks are in hock to everyone from Ireland (3 × the debt of Mexico per head) to South Africa. The banks have loaned more than they should to US farmers who are going bankrupt in the Midwest.

Inflation should be low but if the dollar depreciates imports will push corporate margins, so prices will rise. Workers will demand more to recoupe decline in their living standards and the Federal Reserve will move in to call an end to the growth party. Forecasts cannot be trusted, the world is an increasingly changeable and risky place, particularly if you stand still or bet on incremental change.

Shorter product life cycles

Innovations used to last for years – the steam engine after the initial development stayed more or less the same for 100 years. The valve radio lasted 40 years, now the successful company has to plan for three to four generations of the product over ten years. Philips came out with the first

VCR in 1973; the Japanese had the improved second generation in 1975. By the time Philips were ready with the 2000, a third generation machine in 1979, it was too late. It was incompatible and the market was taken by VHS. Now Philips manufacture VHS under license. They have learnt – every six months a new development of the CD system comes from Philips. They are now producing portables, 16 bit 4 times oversampling, and have 20 per cent of the world market in compact discs. In the City the new product cycle is six months from launch to peak, then the product is a commodity and finally, in a year or even less, a 'has been'.

Globalisation

There is no home service on the wireless and no home market any more. Competition is everything and it is worldwide; technology is moving information faster, freight costs are falling, people want the best at the best price, importers are making more money than anyone outside the City. In the City four of the six biggest securities houses are Japanese. Any commercial organisation has to take advantage of the opportunity for export and think of the threat from overseas competition in any strategy. To counter the rising yen the Japanese manufacturers are moving to become multi-national manufacturers. The area of growth is on the Pacific rim. In 1500 the Mediterranean was the centre of economic growth. Then the Baltic and North seas, then the Atlantic. Now it is the Pacific. The other areas are not in absolute but relative decline.

Organisation and management

Companies cannot afford hives of minions, report writing and the supervising of middle managers. So only the managers who add value, as well as supervise, will survive. There is a premium on people who can make a clear contribution to the bottom line as well as manage people. Business services – advertising, consulting, personnel, training, accounting, software development etc will tend to be contracted out. Staff levels therefore fall and the manager layers can be cut. But the contractor may have a closer relationship with fewer clients. Maintenance and repair will be a growing business. It is predicted that 44 per cent of the US workforce will be engaged in this sector by 2000 – including the making of spares. Multi-careers and retraining of individuals to do different jobs will be required of all large organisations, but everywhere the trend is a higher expectation of self employment or working in services with the smaller firm. The organisation is likely to be cellular with many profit centres rather than functions.

— The chief exec who pleads the case for holding on until things get back to normal has missed the point...

— The strategic problem of the next decade for any organisation is no less than survival...

- The only certain prediction is that the predictions of today will not come about in the way we predicted them.
- What is strategy? Strategy is searching out the changing rules of the game – then finding a way to win. Strategy is a framework that guides the choices that determine the future of an organisation.

Without a strategy

- you assume a continuation of the past;
- new ideas and approaches are unwelcome as they don't fit;
- objectives are arbitrarily set, in financial terms only;
- company plans are a collection of operating plans or a set of wishful aims;
- the operating plans are frequently out of touch with current reality – either too optimistic or pessimistic as they are based on the past;
- assessment of the environment or of company strengths and weaknesses are used merely to adjust projected performance up or down;
- plans are made in great detail in the hope of getting them 'right' and are then difficult to change;
- quantitative resource and trading plans are often focussed on the short term as 'this is as far as we can see'.

The main elements of an organisational strategy

The major opportunities and threats in the organisational environment and the strengths and weaknesses of the organisation itself must be identified. All good strategy is built on information and the analysis of the current situation has to be the jumping off point. There are a variety of tools that the planner, the information manager and the senior management should be familiar with. They range from portfolio analysis on market share and attractiveness for the commercial organisation to attitude surveys on morale within the organisation. The amount of information is massive but we know that many managers are overwhelmed with the amount of data they are given and need help sorting out the noise from the real messages. They also prefer their material in graphic form or in a mixture of hard and soft information. Let us study the better journalists in *Fortune* or *The Economist.*

Focus on the market segment, or client/customer group

The successful strategy will clearly identify the market segment the company wishes to serve, and, if possible, dominate. For Jaguar cars this was luxury car buyers, mainly in the US. In a local authority it will be the residents of the area but is there a particular group that will be the focus for the next four years? Segmentation requires detailed analysis and information – the Next group work out through market research what a particular age and income segment want, rate their various preferences and can then target the operation to developing and meeting the customers wishes.

It is necessary to collect competitor information, and in the commercial world it is possible to resegment the market in the light of the competitor information as narrowly as possible to expose small niches where your company can find an advantage and thereby dominate that particular niche. This can then be used to gradually expand and take over other segments. The central role of the information manager is clear at this stage but the manager must in many cases help the corporate managers with the process of the strategy so that they can play an effective part.

Identify the products or services required
In the example of Jaguar the product was there but flawed. The market segment identified wanted a high quality reliable product. In the financial services market the product from Midland Treasury needed to be developed. For British Airways the product required was service which had to be inculcated into their staff. It included punctuality which meant changes in systems and resourcing.

Identify and develop the appropriate distribution or delivery channel
In today's world the channel may be as key as the product, the *London Daily News* was a good product but there was a problem getting the paper on enough news stands in the right locations. In the grocery business, and in many consumer areas, the big retailers dominate the channels of delivery and the strategy has to take account of this. Jaguar dropped many of their unsatisfactory dealers and upgraded the rest. In local authorities Hackney and Islington tried to move many of their services into local area bases to deliver them on a neighbourhood basis.

Identify and create the appropriate image
The consumer goods suppliers try to reduce the power of the retailers by advertising their brands to the public and thereby creating a demand to the retailers. Jaguar create an image of traditional luxury combined with sporting success. In the public sector the GLC tried to put over the image of caring and innovation for Londoners.

Decide on the critical resources to carry through the strategy
The resources are identified at each stage, in product planning and development and for delivery and for the image. They may be financial, or people or other resources. The Japanese usually decide first on people and skills, including management skills, as these are perhaps the most limited resources; then they decide on land or space, and then money. In different industries the critical resource may vary, it may include raw materials as in oil or timber.

Plan how you are going to get these resources – develop the relationships, attitudes and philosophy that matches all other aspects of the strategy
This tells everyone clearly what you stand for, and what you aim to achieve, in terms of customer satisfaction or innovation or staff relations. We will

return to this in the section on implementation. But the information services manager can play a central role in the development of this difficult conceptual task. They will need to have the skills to encourage creativity, they can create an environment which is both playful and challenging to bring out the values and goals of the 'boss'. To do this a supportive relationship must be created and perhaps a third party brought on board to increase the confidence of all who take part.

Establish what are the assumptions and risks involved in your strategy
This is a neglected area in this country – we don't seem to like dealing with probability, and particularly quantifying the uncertain. IBM, and other multinationals, have techniques of sensitivity analysis which can be adapted to smaller less sophisticated needs and will indicate the level of risk in different aspects of the strategy. Local authorities do not always analyse what could make a given strategy fail, perhaps because the arguments as to whether something should or should not be done are protracted and after a decision is made no one wants to return to the 'what might go wrong' issues. A difference must be drawn between analysing what might go wrong, and planning to avoid it, and opposing the strategy itself.

Establish the follow up and review mechanisms
IBM at its best would say that after six weeks a plan was out of date and needed to be reviewed, not necessarily changed, certainly not in fundamentals, but perhaps adapted tactically. We learn by our mistakes, but above all by feedback – the feedback channels must work. As information managers you can play a vital part in ensuring that feedback is presented in a timely and digestible manner, and that provision is made for it from the start.

The relationship between the chief executive and the information manager

If the manager is to help develop the strategic elements described above the usual relationship with the Board or the chief executive may need to change. There are some examples of the relationship required in some public sector organisations. Let us contrast the current expected role with the new one

Common expectation of relationship	*Required relationship*
– Professional	– Partnership
– Occasional	– Close
– Specialist	– Wide-ranging
– Distant	– Open
– Technical	– Regular
– Expert adviser	– Multiplex

Many of us here may feel comfortable with the expert specialist role but it does not lead to the full use of your skills – to influence in the process of strategy making and this is not being argued to increase your own sense of importance but because it is vital that the organisations in this country have effective strategies based on good information and sound analysis. This is your most significant mission.

Key elements of an information strategy

It was agreed that I would cover the elements of the information strategy, as well as the corporate strategy. I will not describe the content but how to put together a proposal that will, if you get the technical parts adequately put together, win acceptance from your policy committees.

1. Find out the corporate objectives and ensure your proposed strategy links into them and helps their accomplishment;
2. Review the major factors in the business/political/economic environment of the organisation, identify the major threats and opportunities;
3. Review the main internal strengths and weaknesses relevant to your proposal;
4. Describe the key objectives of the strategy/project and state them in terms of the results that will be achieved;
5. Outline the stages of the strategy/project and the resources required to accomplish each of them;
6. Describe the assumptions behind the strategy and get the Board/committee to check them out, outline the main risks and how they will be minimised;
7. Identify the critical factors to success and gain agreement and support to concentrate on them;
8. Agree the review mechanisms.

Revolutionary change is possible

The process of transformation is highlighted in some of the turnarounds and major growth companies in the UK. The features of the process emerged as broadly similar although there is some variation from industry to industry, I have also seen and assisted with this major shift in smaller, less publicised, firms and in public sector organisations. It takes one–two years. It means changing the whole system not piecemeal nibbling:

Markets and products
Quality standards
Production and service units
Timetables and style of R & D
Organisation structure
People and their behaviour

All of these may be brought into question and the rules of the game re-examined, attitudes and outlook of every individual may be affected.

The result is a step increase in quality, profit, image and market share in commercial terms.

What this means for many organisations is revolution and as such we need to learn from the revolutionaries for what Jan Carlson, King, Halpern, Harvey Jones and in the past Weinstock, have done is followed some classic revolutionary doctrines.

- Get rid of the old guard – they will distract and hinder and absorb energy, if they won't fully commit, then they will drag you all down.
- Build a new team and this means a team – bring in key supporters but insist they work together and invest in team building activities.
- Find out the facts behind the pretence – the economic reality will be hidden by people seeking to defend themselves; the political reality may be hidden by people to protect the feelings of others, or the decision-maker.
- Create a visible but controllable crisis – this is probably the only way to communicate effectively in a declining or apathetic organisation.
- Communicate the new reality and ensure everyone understands it – this requires imagination and empathy to present facts in a way that is not too painful, yet is direct, and to give hope while ensuring there is no more wishful thinking.
- Develop and communicate the aims, the philosophy, culture of the leadership – the leadership has to have a philosophy worth communication and for those with difficulties here some starting points are given in appendix 1.
- Implement a new strategy with clear priorities and consistency – people will not believe anything has changed until it is consistently carried through in every aspect of the organisation.
- Train leaders to carry through the strategy with intelligence and flexibility at every level – no individual carries out revolution alone although a figurehead and an ultimate decision maker is needed.
- Mobilise everyone and declare everyone's importance to the change – this is the stage when everyone needs to get and feel they have a slice of the action and that they are important and needed – it's true but class distinctions, reserve and personal ego get in the way.
- Work out the implementation through project teams – these are the actual doers They are temporary, task centered, cross functional, small, and have the best people for the job not liaison officers, and they are backed with authority.
- Keep revolution going – continuous improvement – improvements in output or productivity must be surpassed by increases in quality and customer satisfaction or the business will sooner or later falter. Innovation has to be important including at the right stage breaking the values behind the revolution.

The role of the information manager

The chief executive carrying out such a programme is going to need a deal of support if they are to be effective in the long term. If you have the opportunity to give support, do. The professional skills of the information manager are most demanded in the acquisition of information to cut through the pretence and in the communication of the new reality. This means putting together a powerful factual argument and working with good communicators to put over the messages in an innovative way. The project teams will require the support of the information unit in the rapid collection and analysis of information. And, of course, the review and evaluation, the feedback must go on supported by good information. In the training of the new leaders there is an educational role and in the participating of all there may be a co-ordination role.

Implementation of limited or functional strategies

The strategy at this level may be revolutionary but if so it is more subversive than overt, it may be reformist and evolutionary. The major elements are less well publicised but from some experience I can try to summarise some that seemed significant:

— Identify all possible sources of support and build a network.
— Build the network into a coalition by identifying and concentrating on areas of agreement.
— Use workshops or projects to enable key members of the organisation to learn by direct experience or discussion the costs of not supporting strategic change.
— Quantify as far as possible and communicate the short and long range benefits of the strategy.
— Ensure your values underpinning the strategy are positive and communicate them consistently in your behaviour.
— Break the strategy up into phases that seem possible and not too intimidating, get key people involved in planning the timetable.
— Start where it's easier and get some early success.
— Identify the critical resources and factors in each phase and develop a sub plan to ensure they are present.
— Continue the involvement by ensuring that early credit and appreciation are spread around.
— Build in your own early review/bad news system to try to anticipate problems.
— Keep trying to separate where flexibility is essential and where principles cannot be compromised.

Appendix 1

Top management make a public commitment to philosophy
Features of some successful philosophies today:

— customer satisfaction is number 1
— values not just numbers but people
— innovation constant and commended
— disciplined on own/suppliers costs
— loves their business – wants to be best

Management value: quality
training
learning from complaints
preventing not detecting problems
MGT contact with staff/customers

Information technology and information work

Alan Gilchrist

Alan Gilchrist & Partners

Adapting to change is never easy, particularly when everything is moving so fast that one has less and less time to devote to thinking about the transition process. We are all rather like white water canoeists: carried on rapid waters in a small and fragile boat – in danger of being either sunk or left on the bank – and, with head over paddle, unable to see very far ahead. The change always seems to be external and it is difficult to answer such questions as what change and for what purpose and even if we knew the answers it is unclear to what extent we are capable of affecting the outcomes. What might be helpful is to examine some of the undercurrents that are propelling us forward, affecting our work and our perceptions of our professional role.

Before addressing this task, I will look at what we may mean by the terms 'information technology' and 'information work', before going on to discuss these concepts within the contexts of two thoughts:

- it is impossible to seriously consider information technology and/or information work in isolation of economic forces;
- the management of change must concern itself with infrastructural problems and in so doing, must take into account the very different timescales of technological innovation on the one hand, and social acceptance and assimilation of those innovations on the other.

For me, adaptation does not mean mere survival, it means radical change and this requires strategic planning, combined with the ability to make, and implement, very rapid tactical moves. My fear is that it is too easy to be preoccupied with tactics and survival at the expense of reflection and planning.

Information technology

It is sometimes easy to think of IT as a single entity applied – with variations – to libraries, offices or the factory but, of course, it is far from being so even in one of these areas, for all the talk of integration. It is worth noting that the typewriter and the telephone were both products of the previous century and that photocopiers and computers are both post-World War II. Only in the last full decade have we seen the widespread use of the word processor (and, incidentally, text retrieval software) and now, in the late 1980s, we are grappling with the micro-

Aslib Proceedings, 39(10), October 1987, p 313–326 Printed in Great Britain

computer revolution, management workstations, CD-ROM and expert systems. For the future we are promised more and better of everything, including optoelectronics, Integrated Services Digital Networks (ISDN) and 'smart' everything, from cards to buildings – and ever onwards to fifth generation computing and sixth generating computing, involving biological support. On what will seventh generation computing be based? While much of this, for the moment at least, is science fiction, it is salutary to look more closely at the reality. It is not unfair to look at office automation as a reasonable model of progress, and in doing so we may agree that, so far, while the mechanical foundations are beginning to be in place, the attendant intellectual problems are still unsolved.

Document generation

Without a doubt the device that is having the greatest impact in the office is the word processor, or the micro-computer with word processing software. The advantages are obvious – a single keyboarding into machine-readable form, allowing text to be easily corrected, amended, transmitted and stored. Now, if a hundred monkeys, equipped with a hundred word processors succeed in producing a Shakespeare play in a hundred years – we can store everything they produced on the way.

Document reproduction

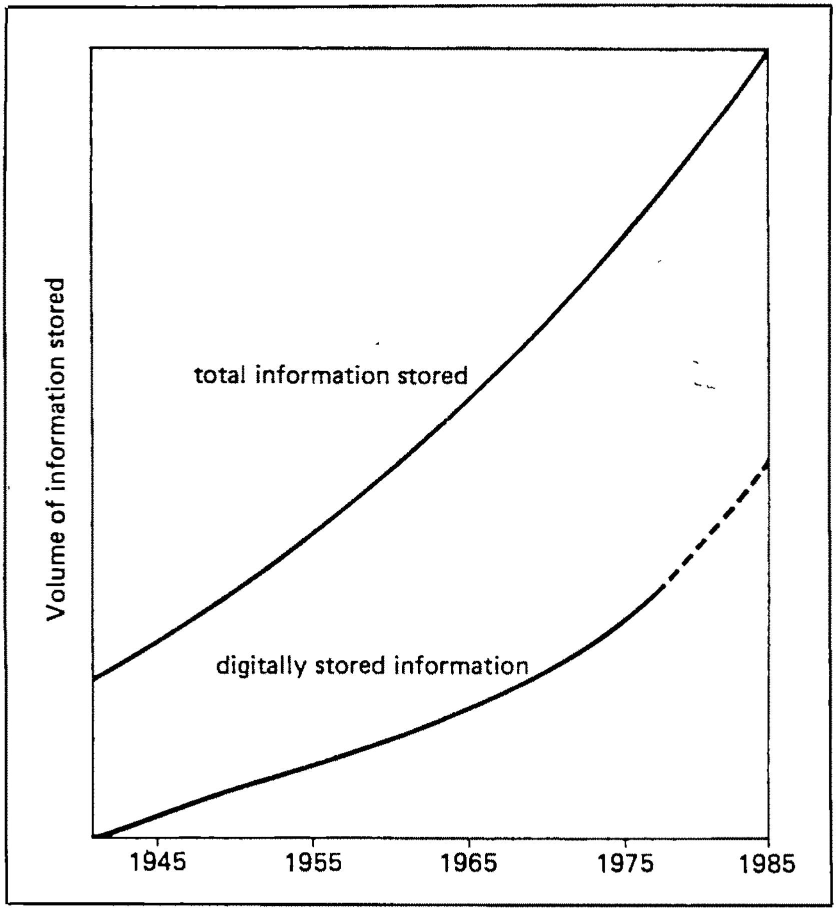
The photocopier is acknowledged to be one of the office manager's perennial nightmares – a monster that eats paper by the thousands of reams, but which has become indispensable. And just when some prophets were assuring us not to worry because the paperless office was just round the corner (through the miracle of machine-readable text) along comes desktop publishing and another million forests are threatened. Note the seductive use of the world 'publishing' for what is, in effect, a printing operation. Figure 1 shows one documented belief that the difference in quantities of material produced as hard copy and in machine-readable form is actually increasing in favour of the former.

Document transmission

Telecommunications is perhaps the area of information technology which is producing the most wide-spread impact, as evidenced in airline booking systems, banking and the investment sector. Various networks – local and wide area, and value added are burgeoning, as are mobile radios and satellite communication which has a long queue waiting for slots in space. Figure 2 shows how widely and rapidly the area has developed.

Within the library area the most visible application has been the availability of online databases but, within the office environment, electronic mail has been an important innovation. Ironically, this has been largely justified by the comparative ineffectiveness of the telephone, which according to one study(4) fails to connect the caller at the first try in a staggeringly high 70 per cent of instances

FIGURE 1 *The information explosion.*



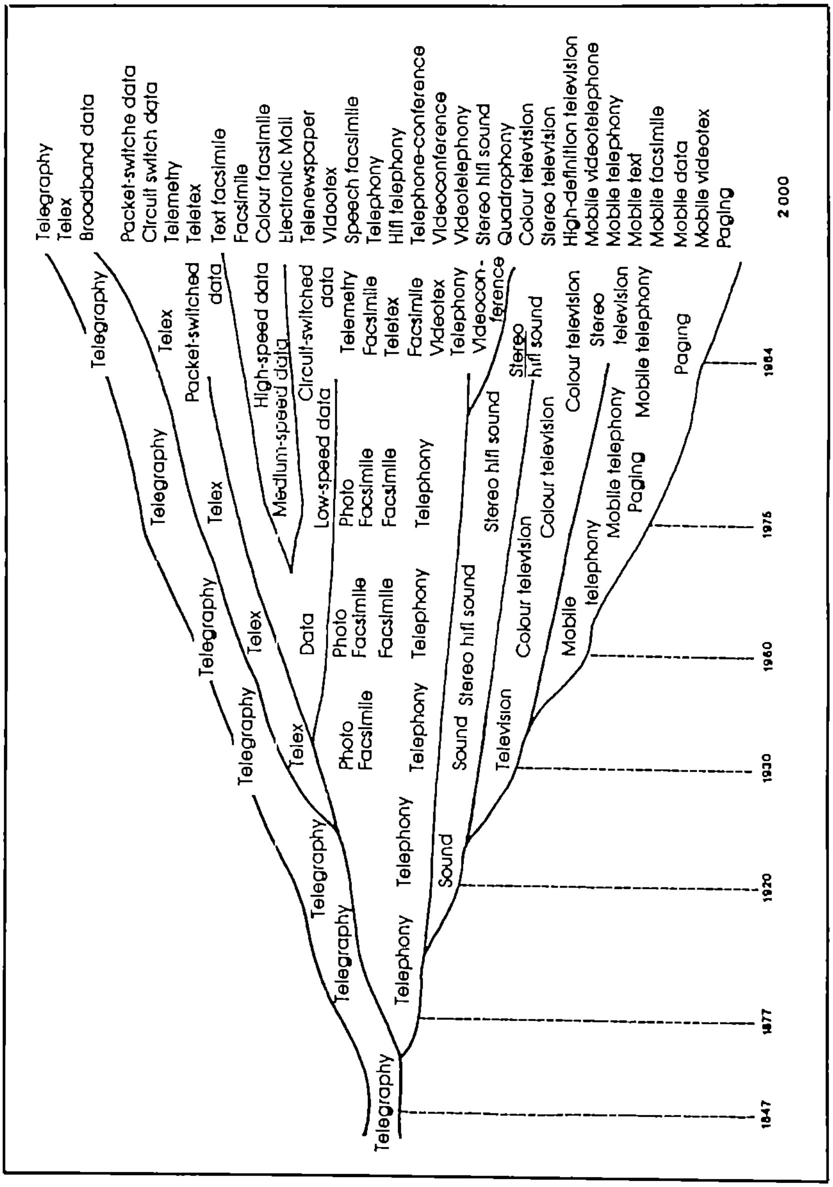
Source: The Office of the Future, Uhlig Farber & Bair.

Storage and processing power

The amazing increase in storage capabilities has brought the microcomputer into a prominent position, and the price war has made 20 mB systems common. CD-ROM is even more dramatic, with a 3-magazine juke-box system holding 400 gB of storage (i.e. 4 × 10″ bytes or 100 million pages of text). It has been predicted that by 1989 there will be a 100 mips machine costing a mere $100,000 – equivalent to today's Cray computer which costs $5,000,000.

From the preceding sections it can be seen that the strongest advances have been made in those areas which are based on hardware. The areas which are concerned with the retrieval and manipulation of information

FIGURE 2. *Expansion of services.*



Source: Commission of the European Communities.

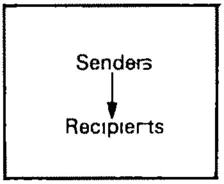
are less strongly supported, and apart from a few small advances in firmware, these areas are based on software. So we appear to be able to easily generate, reproduce, transmit and store data, but less able to make effective use of information.

Information work

As a concept, information work is perhaps even more difficult to understand than information technology. It is not necessary here to invoke the customary citations arguing that 50 per cent of the work force are engaged in some aspect of information work. To a large extent such studies are merely drawing attention to a fact that has long been true, crudely, that a large part of the work force is no longer manufacturing. What it perhaps more interesting is how the nature of information work is changing, particularly in the area of special librarianship. This can be seen from the following Figures 3 to 6.

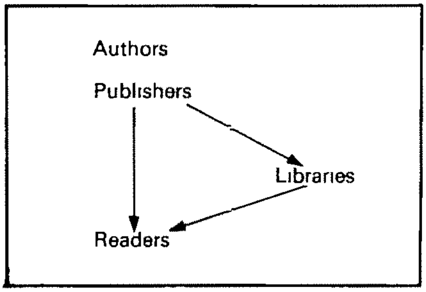
Initially, as in Figure 3, scientists corresponded with each other direct (as did businessmen), both formally and informally:

FIGURE 3.



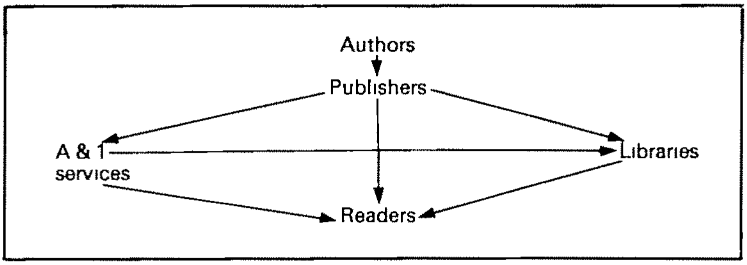
As the senders began to want to reach a wider audience, the publishers added their presence, and libraries evolved into a new significance, particularly in the late nineteenth century to meet the demands of the Industrial Revolution:

FIGURE 4.



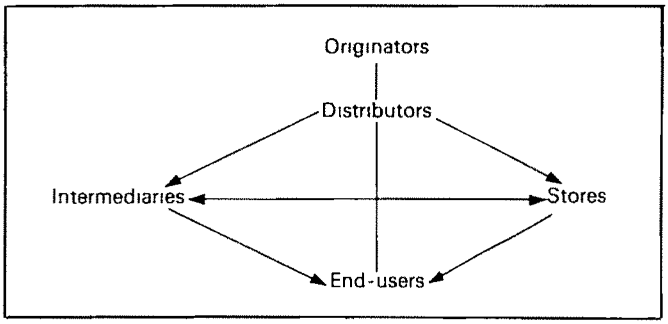
As primary publishing grew in volume, the readers found it more difficult to keep up, so secondary services developed, and these in turn developed into today's bibliographic databases:

FIGURE 5.



Now, if we generalise this simple model to include all 'technical' information flows, we have a more complex (and abstract) picture (Figure 6), the whole supported by a battery of facilities including word processing, electronic mail, spreadsheets, DBMS, text retrieval, CAD, expert systems, Decision Support Systems, 4GL products and system builders:

FIGURE 6.



There are four points I should like to make, with reference to Figure 6.

- 'information work' is dispersed away from the traditional areas of LIS;
- there is a tendency for the range of information systems available to the end-user to converge, though that range is, as yet, poorly if at all integrated;
- that the commercial pressure is aimed at providing information technology to end-users for the simple reason that they represent a very large potential market;

- that end-users and intermediaries will work most closely together where there is a high degree of synergy between them.

Economics

There is little point in discussing information technology and information work without reference to the economic factors that underpin these two areas of activity. I want to look briefly at three factors:

- the decline in our manufacturing base and the correspondingly weak investment in R & D;
- the growth areas in the financial sector and in office automation;
- the technology pull in the IT industry caused by fierce competition.

Manufacturing decline

This is a complex area and, as the economists seem unable to agree, it is at least safe to opine that there has been a sharp decline in manufacturing industry. Over time and in comparison with our major competitors, the decline has been measured in terms of the following indicators: manufacturing output, productivity, employment, net exports, the manufacturing share in Gross Domestic Product, and manufacturing investment. Output has dropped 20 per cent since 1973, and though we are now seeing a slow improvement, for the first time in seven years we have experienced an annual trade deficit of £1 billion, which is expected by the Chancellor himself to double this year – and within that billion pound deficit we have experienced the first manufacturing deficit since the Roman occupation.

Traditional information work – special librarianship – was created out of our manufacturing heyday and it was in this environment that the skills and techniques were formed and sharpened, and the national LIS infrastructure established – a vast and largely social network which has been the envy of many other countries. We are now faced with the problem of adapting that system as many LIS workers migrate away from the manufacturing sector.

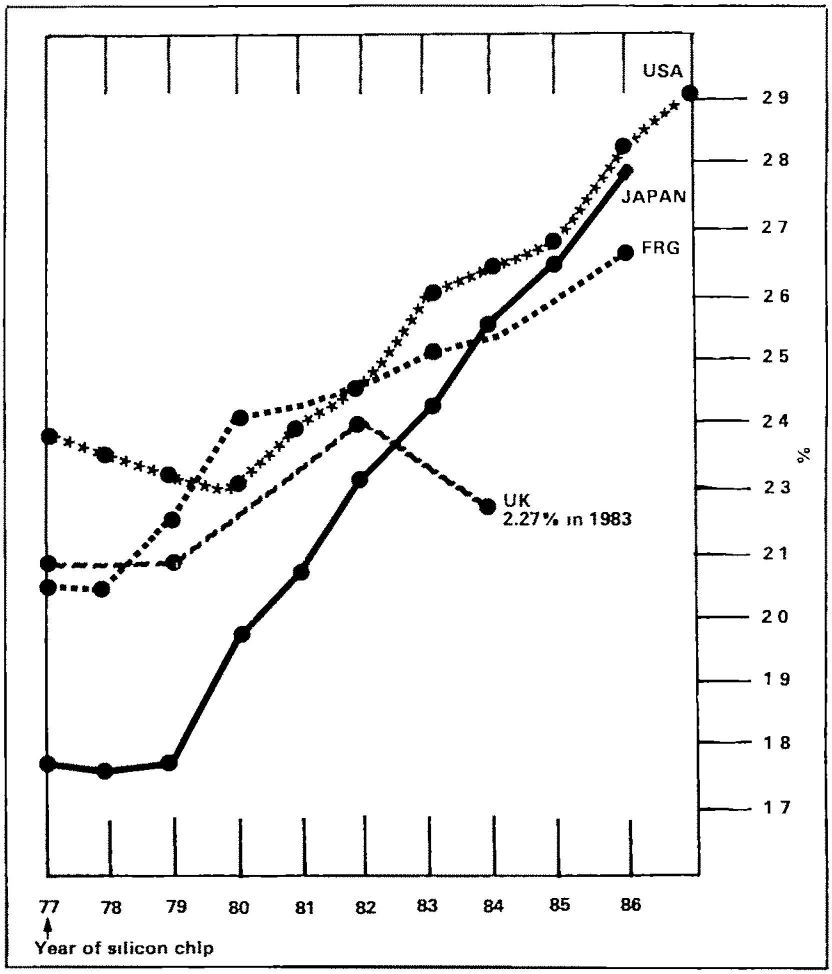
Decline in R & D

In parallel with the decline in manufacturing there has been a marked decrease in expenditure on R & D which at the same time is further weakening our traditional manufacturing base and threatening our ability to build up the new technologies which our future depends on. In January of this year, the House of Lords Select Committee on Science and Technology(6) warned the government that R & D is seriously underfunded in both the public and private sectors, while industry suffers from 'the preoccupation of the City and shareholders with short-term profits'.

Again, the UK can be seen to be falling far behind the other leading industrial nations. This can be seen from what is known as the GERD graph (Gross Expenditure on Research and Development), shown as Figure 7. It is particularly odd and worrying that following the sharp dip after 1981, reporting has apparently stopped in 1983. As with manufacturing, our skills and techniques were forged within the R & D function and even now the majority of our information scientists have first qualifications in science and engineering

Even when we come to look at our R & D investment in IT, many would argue that nowhere near enough money or encouragement are being deployed. Critical reports have been issued by NEDO(8), the Science Policy Research Unit(9), and most recently by the Bide Committee(10) all of which looked at the area covered by the Alvey Directorate, the initiative intended to ensure that the UK keeps up with the US and Japan in the design of

FIGURE 7. *How Britain is falling behind.*



fifth generation computing. (In passing, it is salutary to note that the EC spends four times more on its butter mountain than on R & D.)

Behind this argument about the decline in manufacturing, the inadequate funding of R & D, the shortage of science teachers, the low status of engineers is the belief, held by many, that the City which has the money to invest in sunrise industries is deterred from doing so. First, because they are unable to see the possibility of quick returns. Second, because they have not the faintest understanding of science and technology – let alone information technology (except perhaps in such systems as SWIFT and SEAQ). In fact, one City solicitor has gone so far as to suggest(11), that the City is now, in its post-Big Bang greed and pressure to succeed, actually feeding off and destabilising our declining industrial base – one large step worse than failing to invest in it.

New areas for information work

If it is true that information work has moved away from industry and R & D, it is also clear that two growth areas attracting attention are the commercial and financial sectors, and office automation, and large sums of money are being spent in these areas on hardware and staff. Deregulation and the Big Bang have introduced the term 'Golden hallo' to denote the joining payment to young employees, including DP professionals and financial information workers. The highest profits in the electronic information business are being recorded in the finance sector.

Market forces

The strongest players in the IT business are the hardware manufacturers, the giants who effect the technology pull. Depending on the jargon used, the objective is to 'move tin' or 'boxes'; to achieve the 'commoditisation' of hardware. Get the hardware in first. then worry about the software. Get the software in, then worry about the applications. The marketing strategies of the hardware companies are now aimed at the departmental (in large effect, the individual) level; the creation of a vast number of so-called 'information centres' linked by more hardware in LANs, WANs and VANs. That strategy is backed up by a frantic search for applications software that will run on the particular configurations under the particular operating systems.

It is a particularly well-known problem that there is a severe shortage of programmers, so that there is a bottleneck in software design and provision. This shortage is exacerbated by a fierce competition to create new packages, one small step ahead of (or at least different from) the competition; often resulting in poor support and downright bad documentation. One answer to this is claimed to be fourth generation languages (4GL) and other system building software, which claim to bring easy programming to the end-user. Now, while some authors claim increases of 300 to 1 in productivity for professional programmers(13), a study in the USA has concluded that end-users were able to utilise only between

5 and 10 per cent of the capability offered by 4GLs(14). The double-edge intention is clear: freedom for the end-user takes the strain off the programmer workforce – just as it does in supermarkets, cash dispensers and the whole DIY industry. So, shifting labour costs to the end-user is a trick quickly learnt by the information industry and why, in passing, should information providers and database hosts spend money on indexing when end-users can pay them for searching?

The other area which has attracted a great deal of hype and box-shifting is that of office automation. A survey, conducted by the Institute of Administrative Management(15), suggests that in 1987, £1,000 will be spent on office equipment for each white collar worker – an increase of 100 per cent over the past ten years. And this is an application area which, to judge from the DTI reports(16) has met with only qualified success and where it has been shown that increased use of IT in the office results in an increase in employment(17).

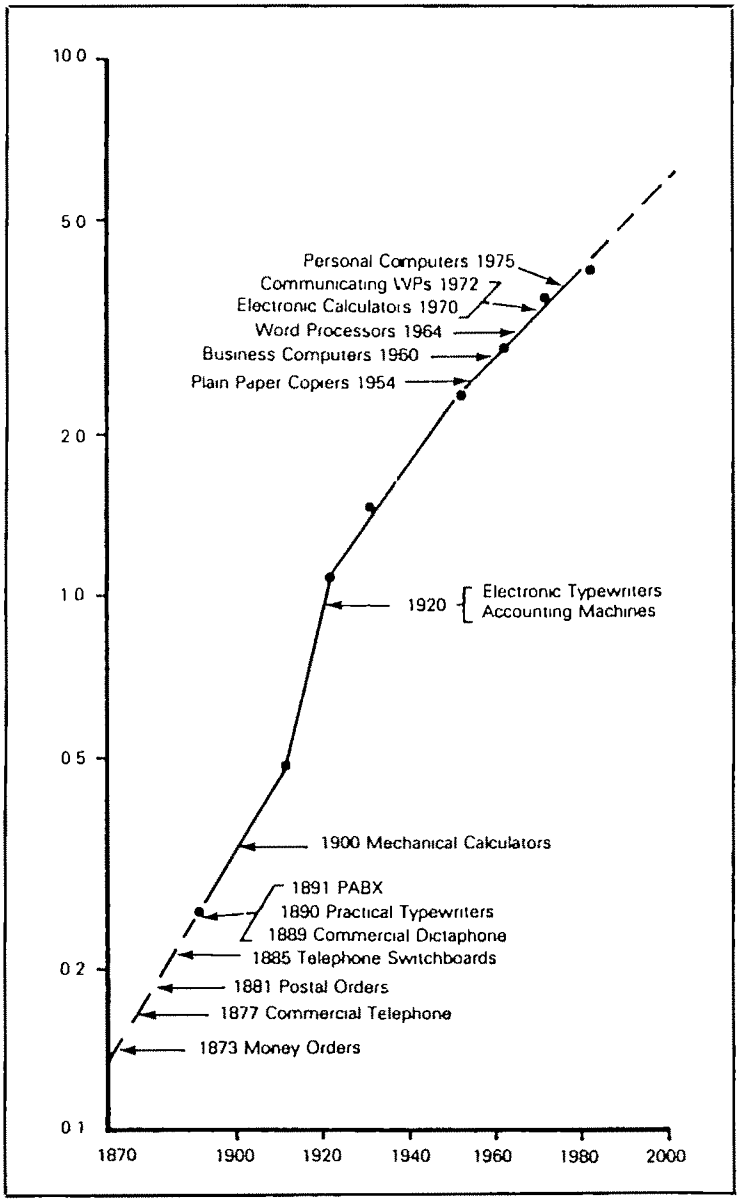
Information infrastructures

Information technology in the factory is now, in reality, breathtaking. Automated plants can now be built which, at the substitution of one master computer program for another will effect almost instant retooling; that is, in a matter of minutes one can switch from manufacturing pulleys to door knobs. Unfortunately, it is not so easy with information systems and their services, because these are social systems. Furthermore, we should remember that in this area innovations do not necessarily replace what went before – they are more likely to encapsulate earlier systems. Until there is some semblance of a national information policy we will continue to suffer from evolutionary disjunction. In particular, the shifting of responsibility from the professional information worker to the end-user is bound to create problems, exacerbated by what one university librarian has termed 'bibliographic anarchy', seen, for example, in the grey literature created by desktop publishing.

I know at least one organisation where the library has degenerated into an archive for historical use, while all the useful documents are to be found stacked in heaps on the floor of the research department. In other cases, librarians have remarked that it is becoming increasingly impossible to acquire much of what was requested because it was either not listed, or because it was a report from a consultancy organisation, costing £350.

I mentioned timescales in my introduction, and we should remember how long it took to establish what one might call 'the national information system infrastructure' – admired, by many, but difficult, if not impossible, to reproduce. Of course, this system has to adapt, even radically, but it will be dangerous to ignore it or allow parts to perish while they are still needed, as almost happened to the GLC Research Library and its Acompline and Urbanline services. How long will it take for 'the national electronic information system infrastructure' to be built up, and how will it relate to the pre-electronic infrastructure?

FIGURE 8 *UK clerical workers (million)*



John Ashford, in a recent article entitled *Document storage and retrieval in the electronic office,*(18) began to spell out some of the necessary actions, which we may infer he thinks may be novel to the average management services department: 'at the creation stage, identify the sender, recipients, date of creation and date of transmission, etc etc.'. Ashford signals the need for a whole range of other bibliographic or 'text-handling' processes such as indexing (some form or other), weeding, and the control of documents in various 'editions' carrying subsequent amendments. These processes suggest the need for standards.

With IT standards, all the talk is of OSI and High Sierra, but much needs to be done at more mundane levels. A EUSIDIC report(19) has drawn attention to a whole range of barriers to the growth of the European information industry, and formal standards are listed as one of the requirements. But, at these mundane levels, some of the standards are still simplistic. For example, examination of the standards relating to Office Document Architectures (ODA) and Standard Generalised Mark-up Languages (SGML) suggest the need, as one researcher has pointed out, for the equivalent of bibliographic standards such as MARC(20).

As mentioned earlier, we have a long way to go yet in the design of effective text retrieval systems and supporting software. Keith van Rijsbergen(21), a leading authority on information retrieval, has this to say: ' the various approaches to [information retrieval] have had only limited success, mainly because the problem of representing the meaning of text *and* of its use in the retrieval context remains largely unsolved. In the meantime, much research in information retrieval has concentrated on inventing friendly user interfaces and speeding up the retrieval process through clever hardware and software design'.

The effective application of cost-benefit analysis to information provision has so far eluded us, as it has done, I believe, in the not dissimilar field of education. In the prevailing climate of rigid monetarist thinking the worry is that the planners and many of the players are more concerned with prices than with values. Of course, information costs money and it is right that those in the information industry should make appropriate charges and enjoy a proper return on their investments, but it will do nobody any good if the old foundations of that new industry are not maintained and strengthened

REFERENCES

1 MEYER, N. Office automation A progress report. *Office Technology & People* 1(1) March 1987

2. UHLIG, R , FARBER, D. and BAIR, J. *The office of the future* North-Holland, Amsterdam 1979.

3 Commission of the European Communities Proposal for Council Regulation on a Community action in the field of telecommunications technologies (RACE). COM 86 (5&7) final CEC. Brussels 1986

4 Quoted by G PHILIP and E S YOUNG. Developments in speech technology, Part II. General applications, and potential applications in libraries and information services *Journal of Information Science*, **13**(1) 1987, 15–23.

5 HUGHES, JOHN Deindustrialisation gathers pace in the 1970s. In, COATES, D and HILLIARD, J. *The economic decline of Modern Britain, the debate between left and right.* Harvester Press Brighton, 1986.

6 House of Lords Select Committee on Science and Technology. Civil Research and Development. First report, Session 1986–7. HMSO London, 1987.

7 Losing the race for industrial survival The Times 16 2.87, p 10.

8 NEDO *Crisis facing UK information technology* London, NEDO. 1984.

9 FREEMAN, C and SOETE, L. *Information technology and employment. An assessment.* Science Policy Research Unit Sussex University. 1985

10 BIDE COMMITTEE *Information technology the national resource – a plan for concerted action.* London HMSO 1986

11. PHILLIPS, A. Crime in cuckoo city. *The Observer*, 14 December 1986, p. 8.

12 The information business *Business Week*, 25 August 1986, 48–51

13 COBB, RICHARD H In praise of 4GLS. *Datamation* 15 July 1985, 90–3, 96.

14. RYMER, JOHN Get ready for R-DBMS *Computer Decisions* **18**(21) 30.9.86, 36, 38

15 AINSWORTH, J. and KING, A In 1987 you will spend £1000 on office equipment for each of your white collar workers. *The British Journal of Administrative Management*, 2 March 1987, 7–8.

16. KMG THOMAS MCKINTOSH *Profiting from office automation. Office automation pilots* 2 vols DTI, London. 1986.

17. Personal communication.

18. ASHFORD, JOHN. Document storage and retrieval in the electronic office *Information Development* **1**(2) April 1985, 109–113.

19. EUSIDIC/EURIPA *Interim report on barriers to the growth of the European Information Industry* EUSIDIC. London 1986.

20. VAN RIJSBERGEN, K Editorial. *Information Processing and Management* **22**(2) 1986 81–2

21 VAN RIJSBERGEN, K op cit.

21
YEARS OF
program

index to program

Volumes 1-20 1966-1986
Compiled by C.W.J. Wilson

An index to **Program: automated library and information systems,** which lists the author, title and subject of every article, short contribution, letter and reviewed item published since its first appearance in 1966.

Index to Program is the ideal single source reference tool for readers of **Program.**

ORDER FORM

☐ Yes please, I would like ______ copies of INDEX TO PROGRAM
Price: UK £25 (Aslib members £20); overseas £35 (Aslib members £25)

☐ Payment enclosed ☐ Please invoice me
(Cheques are payable to Aslib)

NAME ______ DEPARTMENT ______

ORGANISATION ______

ADDRESS ______

______

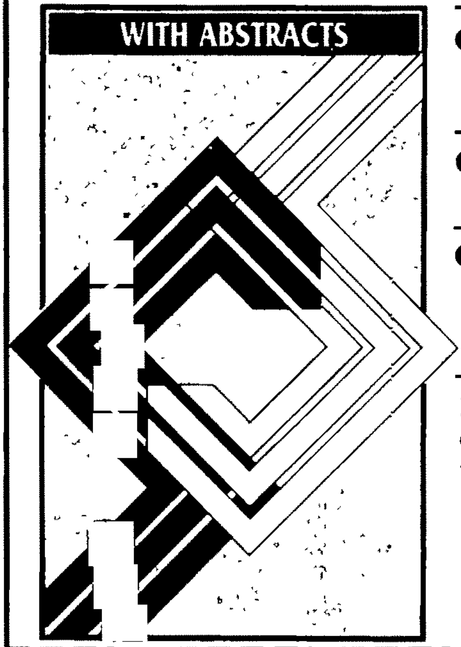
______ SIGNATURE ______

Publications (Sales), Aslib, Information House,
26-27 Boswell Street, London WC1N 3JZ
Tel: 01-430 2671

ISBN 0-85142-215-2
235 × 155; 90pp, Paperback

THE ESSENTIAL RESEARCH TOOL

INDEX TO THESES



The authoritative and comprehensive bibliography of all 10,000 theses accepted for higher degrees by the universities of Great Britain and Ireland, and the Council for National Academic Awards.

- **FULL COMPREHENSIVE ABSTRACTS** offering an incisive summary of the content
- **AN ENHANCED SUBJECT INDEX** guides you quickly to relevant theses
- **TEN TIMES MORE INFORMATION EVERY QUARTER** allowing you to research with precision and efficiency

Every thesis entry includes a subject classification, abstract number, thesis title, author, university, degree, year, document delivery ordering number and NOW INCLUDES A COMPREHENSIVE ABSTRACT.

NOW EXPANDED AND IMPROVED

Aslib

INDEX TO THESES WITH ABSTRACTS

☐ Yes please, I would like to subscribe to **INDEX TO THESES WITH ABSTRACTS** for one year **£140** ☐ Payment enclosed ☐ Please invoice me
(Cheques made payable to Aslib)

☐ Yes please, I would like more information on **INDEX TO THESES WITH ABSTRACTS.**

Name ______________ Department ______________
Organisation ______________
Address ______________
____
Postcode ______________ Country ______________
Signature ______________

Expert Information Ltd, Woodside, Hinksey Hill, Oxford OX1 5AU, England Tel Oxford (0865) 730275
Aslib, Information House, 26-27 Boswell Street, London WC1N 3JZ Tel 01 430 2671

25 JUN 1988

NEW FROM ASLIB

NATIONAL LIBRARIES 2

1977-1985

Edited by

Maurice B. Line and Joyce Line

This collection of recent articles, edited by Maurice and Joyce Line, describing important developments in national libraries worldwide, is now on sale.

This reader identifies the nature and functions of national libraries in general and looks at individual libraries in all six continents.

National libraries 2 is a sequal to the editors' earlier reader, *National libraries (1955–1976)*, which is still available.

ORDER FORM

Please send me .... copies of *National libraries 2 1977–1985*

☐ Hardback at £35 (Aslib members £29.50); overseas £39.50 (Aslib members £35)

☐ Paperback at £25 (Aslib members £19.50); overseas £29.50 (Aslib members £25)

☐ Payment enclosed (Cheques are payable to Aslib)   ☐ Please invoice me

NAME ______________________ DEPARTMENT ______________________

ORGANISATION ____

ADDRESS ____

____ ____________

______________________ SIGNATURE ______________________

Publications (Sales), Aslib,
Information House, 26-27 Boswell Street,
London WC1N 3JZ.
Tel: 01-430 2671

ISBN 0-85142-203-9 hardback
ISBN 0-85142-204-7 paperback
234 × 156mm, 408pp;
September 1987

Aslib PROCEEDINGS

Volume 39 Number 11/12 November/December 1987

Information for the City: a role for free text systems 327
John Ashford

End-users: threat, challenge or myth? 337
David Nicholas, Gertrud Erbach and Kevin Harris

Issues facing learned libraries 345
David Hall

The evaluation of library and information services in times of economic restraint 349
Elizabeth Rodger

Factors affecting information technology transfer 355
Dr Muhammad A Marghalani

ISSN 0001 253X

ASLIB PROCEEDINGS

Volume 39 NOVEMBER/DECEMBER 1987 Number 11/12

Aslib Proceedings carries papers given at Aslib meetings and conferences, and contributed papers of interest to practising professionals. These describe innovations in information management techniques, applications of existing information products and services, and case studies of information units and special libraries.

Aslib Proceedings is published monthly and supplied free to members of Aslib. Annual subscriptions to non-members: £55 (UK)/£80 (overseas); additional subscription to members: £45/£65. Single copy prices and subscription information are available from the Subscriptions Department, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ.

Manuscripts and editorial enquiries should be addressed to the Editor, Sarah Wilson, *Aslib Proceedings*, Information House, 26/27 Boswell Street, London WC1N 3JZ. Manuscripts should be 1,000 to 3,000 words, typewritten, double-spaced, single-sided on A4 paper. Figures should be reproducible. An abstract of up to 200 words should be included. References should follow British Standard 5605:1978. Published authors will receive twenty-five free offprints of their article.

Advertising information is available from the Editor, as above. Further information about Aslib's services and membership rates will be supplied on application to the Marketing Manager, Aslib, The Association for Information Management, Information House, 26/27 Boswell Street, London WC1N 3JZ. Telephone: (01) 430 2671; telex: 23667 (answer-back Aslib G).

© 1987 Aslib and contributors

ISSN 0001 253X

Information for the City: a role for free text systems

J H Ashford

Director, Ashford Associates Ltd.

Paper presented at STATUS User Group Meeting 24 March 1987.

The information consumers

The City, that topographic uncertainty which more or less coincides with the City of London, but laps into adjacent boroughs and now has 'telecommunicating' outposts in some of the outlying suburbs, is a complex and dynamic place. It has markets, retail and wholesale; specialist manufacturers; brewers and food processors; a major oil company; publishers and printers; museums; libraries and tourist attractions; and shops and houses. All of this diversity, for the purposes of this paper, is set aside, to consider the City in its role as the main centre in the United Kingdom for the provision of commercial services.

The assistance of some of our City clients and of other firms in preparation of this paper is acknowledged. For a variety of understandable reasons, few were willing to be cited by name, and so much of what follows is from 'well-informed City sources'! The primary activities centre on the movement and application of money:

- banking services, concerned with the provision and movement of funds – trading capital, foreign currency, settlements, deposits;
- trading in the shares of public companies, in Government stocks, and a number of parallel and ancillary financial holdings – the formal centre is the Stock Exchange;
- trading in commodities, either current consignments, or 'futures' anticipating production or delivery;
- the 'investment' aspects of insurance.

The second major group is that of the professional services:

- insurance of all sorts, through both general and specialist companies, and through Lloyds as an underwriting – 'risk' taking – centre;
- accountancy, with roles in audit services, financial accounting, taxation services, and advice and consultancy;
- management consultancy, ranging from 'top level' corporate advisors to routine organisation and methods and staff recruitment;

- legal services, concerned with litigation, but also with advice and planning, contract negotiation, arbitration and settlement, taxation (again!), and management of clients' long term corporate records; and . . .

  . . . a vast public relations, promotion and advertising industry.

Those in the primary group make their living by the capable and informed disposition of their own and others' funds; in the latter group the services – and the incomes – depend on marketing the skills of fee-earning professional staff who normally comprise the majority of the payroll of the firms concerned. In either case, being 'well informed' is of the greatest importance, at all levels from formal education to current gossip, and City information services have grown up, first in printed media, and more recently in the form of 'online services' to meet these needs. The currency, form and accuracy of information are all important. Although there is a popular impression that the principal City activity is the leisurely lunch, the majority of professionals consider themselves to be under pressure both of overall workload, and of the timeliness of their current activity, and this is, in many cases, demonstrable. The time scale on which *information* is applied does, however, vary.

Some trading operations are interactive, 'real time' processes, and contractual information must be available in seconds rather than minutes. The effect of deregulation of Stock Exchange practice, and of the development of a communications based world market in currency and commodities, has been to force investment in computer based operations for all firms which hope to succeed, and to tie the trader to a terminal for a fair part of the working day. A number of online information vendors now support this 'electronic village' (McLuhan's concept at last realised) with data on stocks on offer and prices (TOPIC), and on currency markets and commodities (Reuters, Telerate and others). More often, transactions may be completed in minutes, after planning that has taken hours or days. Here the online sources of 'news' (TEXTLINE, World Reporter. HOTLINE) may be relevant, as are the broad based economic data sources (CISI-Wharton, I P Sharp, and others), and the market sector specialists (Platts Data Bank and Petroscan, for example, for oil and gas). In most cases, these services are based on the expansion and diversification of former 'paper' products, and often the two forms exist side by side, as in the case of a number of 'stockbrokers' letters'. The *Financial Times* continues to prosper, and has its secure readership on the morning 'up' trains from Maidenhead.

Two other notable changes in City working may perhaps have affected the *services* more than the *traders*. There has been a progressive replacement of the old, reliable, worldwide but *slow* telex service by electronic mail networks, some commercial, some private. Feeding these communications services with 'electronic' documents, but also making word processing commonplace, the within-office mail networks reasonably common, spreadsheets pervasive, and electronic diaries possible, if not liked, is the office automation system. *How* these systems are applied is variable. In some offices, the secretaries and assistants have been given terminals or microcomputers, and the systems have been automated, but the professionals continue unchanged. In others, those who once drafted on paper or dictated, compose their own texts on word processors, analyse financial data on spreadsheets, and undertake their own modelling projects. The *data processing department*, traditional style, appears at times to be largely unconcerned in the office processes.

The shape of information

To be clear about the application of free text systems for City information, it is worth reviewing briefly all of the normal forms which information (data + context) takes. (The following analysis draws on that of E R Tufte, and those who wish to pursue the quantitative *data* aspects, and especially their *presentation*, are recommended to follow up *The visual display of quantitative information*, 1983).

The scale of the online information market as a whole should be noted. The LINK 1986 Report forecasts a European *data* market of US$1,845 million by 1990, of which 90 per cent is in financial and economic data. The *text* market, both full text and bibliographic, amounts to some US$180 million in the same year, or about as much as the one tenth of the 'data' market accounted for by all classes other than financial and economic. The simplest form of data is single valued. Such information as 'closing share price' or 'tourist exchange rate' is stored at the 'leaves' of an indexing tree such as:

Date > company > range or price > bid or offer => value
Date > type of rate > country > buy or sell > reference currency = > value

The trees may be more complex, especially in dealing with 'futures', and the values may be stable or volatile, but the user seeks a single 'best estimate', the process is a formal search in a predictable context, the result is simple in form, and there is no application of text storage and retrieval of any significance. At the next level of complexity there are comparative tables and time series data – and this may, in fact, be the predominant form of information storage used in planning and decision making. Typical data sets include:

- economic series by country and region;
- IMF Balance of Payments statistics;
- OECD indicators of national activity;
- employment data;
- inter company comparisons (data form);
- company data sheets with year to year performance;
- time series of principal share prices;
- time series of commodity prices;
- time series of currency exchange rates.

The information is normally structured, and access is by knowledge of this structure, although there are some cases, such as company data on BT Hotline, where the accompanying text may also be used as a searchable part of the record.

The third 'data oriented' information group is of transformed tabular material – formal graphs; statistical evaluations; trend analyses; 'presentation' graphics. The transformations and presentation may be done by the original data vendor – see, for example, articles in the *Economist* or *Financial Times* – or by the end-user, on general purpose software, or using more special systems supplied by the data vendors. In published analyses, the surrounding text may again offer an access route.

Widely applicable data is generally collected and marketed by 'publishers' such as Reuters, I P Sharp, CiSi-Wharton and others. Individual firms build up internal data sets in their own specialisations, and while the scale of any one of these systems is small compared with the general sources, they are important to the firm concerned, and the sum total of all data held in this way is probably very large.

Information in *text* form (as opposed to numeric or coded data) ranges from traditional books, reports, newsletters and other published sources, to internal reports and analytical papers, to letters, memoranda and other administrative papers. Most, except books, now actually or potentially exist in electronic form as well as on paper, and the inhibitions on 'electronic texts' due to the need to embed graphics and pictorial matter are less constraining for legal and financial material than for many other applications. (Patents, scientific papers, geological data represent the more difficult categories!) Some text information has little formal structure. Press cuttings, in paper or electronic form, have a headline, a text body in author's paragraphs, and maybe a few keywords added by a database editor, either *ad hoc*, or from some sort of controlled vocabulary such as Library of Congress Headings. World Reporter has this minimal structure for its online newspaper files, and BT Hotline is similar for the Cambridge Database of telecommunications and computing literature. More structure is introduced in legal reports and cases, such as those maintained online by Kluwer Datalex, and in the 'electronic loose-leaf' caselaw handbooks of Samsom Uitgeverij (STATUS User Group Annual Conference, 1986).

Full text prepared in office automation systems is readily retained in electronic form, but presents a number of problems in classification and indexing, and especially in separating out and 'weeding' material which is either trivial or ephemeral, so that databases do not become cluttered. At least one major firm of solicitors maintains a large text database of case reports, where the record is partly structured (case, client, keywords) and partly narrative summary of the matter and its outcome.

All of the types of information discussed above are 'fact' sources, in the sense that retrieval of the record, whether paper or electronic, provides the 'answer' to the search request. There is also the widely used category of 'bibliographic' or 'catalogue' databases, often maintained online using 'full text' software, which do not yield an end result in themselves, but point onward to a full text located elsewhere. Since many of these indirect records do not, in practice, conform to any recognisable bibliographic standard, but may be very much *ad hoc* constructions, they are referred to hereafter as indicative text records.

Information quality

If information is to be used as the basis for decision making, then knowledge of its quality is almost as important as the data itself. Both formal and informal practices have been established for decision making under uncertainty, and for controlling the intrinsic reliability of information, and for present purposes the latter are of interest. Stable, long lived, high value information – *'hard data'* – is usually formally verified. The well established processes of peer review apply mainly to scientific and technological publications, take considerable time and intellectual effort, and maintain a reasonable, but not infallible, control of the quality of the primary literature. Tertiary, or review data, may be subject to exhaustive checking of many sources for key values, and the cost is accepted because of the value of the stable information to many researchers. These procedures have little application to City information, partly because of its volatility or short life, partly because of the pressure on timeliness. The only comparable examples on any scale are the deposit of company annual reports, which are at least audited, and the parallel publication of the results of public companies, which are at least retrospectively subject to the standards of the Companies Acts. (It is not clear, at the time of writing – February 1987 – that information published during take-over proceedings even by large and reputable companies and merchant banks is beyond question in all cases.)

Fast moving data is normally accepted at a quality level assessed on the long term performance of the supplier. Share prices, commodities and exchange rates can be verified only in retrospect, and since, for many users, it is the immediacy that matters, the data presented in share listings or online must be taken on the basis that Reuters or Telerate or Datastream are believed to be capable of day-to-day quality of reporting performance – and these companies and their competitors invest considerable effort and resources to justify trust in their reliability. At a less hectic pace, this is more or less true of all economic and market research data, although where time series and surveys are concerned, the information vendors can, and often do, expose the detail of their data collection processes to chosen clients as assurance of the thoroughness of the validation.

Information generated *internally* by City firms, whether numeric data or texts, is under local control for quality. How good it is will depend on the skill and effort applied by professional and other staff concerned, and, importantly, by the resource which may reasonably be expended, given its application and life. In the case of professional advice, the quality is likely to be as high as the firm can sustain, and databases of past cases and client studies often represent a major repository of 'know-how' and research on rarely applied legislation or judgements. As financial markets come to depend more and more on computer support of their central processes, investment in software documentation, the management of its quality, and its efficient storage and retrieval become a significant, though specialised, part of information management.

There are also less verifiable, but still important information sources. Some online suppliers, for instance Dun & Bradstreet and Infocheck, provide credit ratings on companies, valuable in building up a comprehensive assessment of a business. Stockbroker reports by respected firms are often highly regarded, and some are becoming available as magnetic tape, disc, or online services to subscribers. (In the oil and gas field, for example, there are Wood MacKenzie & Co and James Capel & Co.) Here the user's assurance of quality depends both upon the long term performance of the information source, and upon the reputation and professionalism of the analytical staff concerned. Some newspaper commentators are also well regarded, though different users make diverse and conflicting appraisals of the main sources, and there is a tendency to read several, cross check, and apply in house data where available before taking too much on trust. This is different from the use of newspapers as records of 'events' where the facts reported, at least in the financial and legal sections, are likely to penetrate any normal degree of journalist's enhancement of 'news values'.

Opportunities for free text ISR software

The applications for indicative text (bibliographic, *sensu lato*) are generally more easily implemented than full text, and are less demanding on computing and communications resources. These are, predominantly, indexing functions, providing a route to documents on paper, on microform or in high density electronic image storage (video disc etc), so that records in store may be retrieved by routes other than searching through classified 'clusters'. When full text is held online, this may be because the body of the text contains terms which are useful access points, and so form an alternative to indicative text indexing, or because sight of a large part of the text is necessary to check its relevance. Often, however, it is as much a question of document *delivery*, when the user's need for fact is sufficiently pressing to make a two part search, indicative text online plus conventional print in the library or registry, impracticably slow. This distinction has become a little blurred recently, as the availability of video discs, with either image or coded text, has provided electronic document delivery immediately following on from identification of a 'wanted' record from an indicative text source. There is also the less spectacular but still valuable application of full text storage in order to be able to scrap all, or at least most, copies of administrative paper, so saving in space rental costs from £75 per filing cabinet per year in 10 year old office buildings in Reading, to twice as much in new and prestigious City accommodation. Constructive use of microfilm can yield similar savings.

The most obvious, straightforward and well understood application of indicative text is in the library. Applications range from catalogues of books and reports; periodicals holdings and analytical entries; current awareness and SDI services, maybe including 'downloading' of bibliographic data from the online sources. The practice of a library in a City firm differs little from special libraries in general, and these topics are well documented, especially in the proceedings of BASIS, CAIRS, SEARCH and STATUS User Group meetings. Press cuttings collections are often important, and some libraries add reprints of key papers to the subject folders used for the cuttings. Unfortunately, cross referencing using free text software, while practical, tends to be costly relative to the number and value of the cuttings themselves, and given the increasing availability of full text online services, the future of the traditional cuttings collection may be in some doubt.

Registry systems, on the other hand, are a relatively unexplored area for free text systems, and although applications are not so easy as they look at first sight, there are savings in staff time and improvements in retrieval effectiveness to be found. The level of detail to be recorded in the indicative text record varies with the size and value of documents filed, and with the inherent diversity to expected within normal filing clusters. Applications have been reported at STATUS User Group meetings: A Thomas in 1982, and RCF MacLatchie in 1985 (Australian experience). If registry management, rather than simply storage and retrieval is required, a hybrid system using relational database methods for file issue and recovery, and free text for indexing, may be needed.

Analogous systems for the indexing of microfilm collections are straightforward and effective, but the writer is not aware of any City examples at present. In the near future, the application of indicative free text indexes to compact disc and video disc storage is likely to offer real opportunities for high density, stable storage of a range of material, coupled with flexible retrieval systems. Applications of computer storage and retrieval of full text may conveniently be divided by the time scale of retention, into long term; medium term, six months to six years and short term (mainly office automation) text. The long life information kept on full text databases is that which retains active information values, that is, it excludes records kept solely for legal or fiscal purposes which are simple to index and rarely accessed – standard contracts for services; superseded agreements; construction records; personnel records for former staff. Records of interest include:

- contracts and agreements (non standard) and their schedules and appendices, recording the entitlements and obligations of the firm;
- internal reports and case summaries, with lives of up to 10 years in most City concerns, and much longer in, for example, company and marine legal matters;
- special insurance contracts;
- minutes.

These long term records are more typical of the professional service firms than of the banking, stockbroking, or commodity trading group, though exceptions occur, and may be significant for a particular firm. The arguments for full text online are from the indexing facility and space savings, rather than from any urgency over document delivery, although the ability to 'browse' is sometimes appreciated.

Medium term documents, which include the early years of long life material, provide the majority of full text database applications. The records are kept in this form both for the flexibility and cost effectiveness of content plus keyword indexing, and for online delivery. Space savings are real and valuable, but are usually not the primary objective.

Qualified texts probably constitute the most frequent use. These may be substantial internal reports and cases, or may derive from purchase of external texts – such as brokers letters – in computer readable form. A broad subdivision into 'subjects' which correspond to the responsibility areas of senior professional staff is common, but as clients and topics change, and staff are promoted or move, it becomes important to be able to search across wide ranges of material when performing research on new projects. In STATUS terms, the 'chapter' level is appropriate for responsibility defined subjects, unless the whole database scale becomes unmanageable. In general, this material is of sufficiently long life and value to justify the cost of adding selected keywords from an established vocabulary, to ensure that ability to retrieve is not compromised by drift in the professional language, or changing fashions in City jargon.

Downloading of online source material, either independently, or to augment internal documents, is increasingly practised. 'News' items of all sorts may, subject to agreement on copyright, be taken from either the general purpose or the specialist full text data vendors, and both commercial news services and the legal databases are moving towards licencing users to exploit material in this way for internal use. Alternatively, text may be taken from electronic media material published in CD-ROM or WORM format (Kluwer Datalex and Samsom Uitgeverij, noted above, among others), and there is at least talk of selective cuttings services on magnetic tape or disc replacing the more conventional forms. The new Datext service offered on CD-ROM with accompanying software by Datext Inc. provides a set of four discs grouped by consumer, industrial, technology and service sectors. Each disc contains a relevant slice of INVESTEXT (investment banking); DISCLOSURE II; PROMT (markets & technology); ABI/INFORM (business abstracts); Media General MARKET (stock prices and trading volumes); and Marquis WHO'S WHO in finance & industry (biographical data). Currency of this material is still raising some difficulties, partly solved by auxiliary issues of recent material, but at about $20,000 per year for the full service, this sort of product could challenge present assumptions about online database economics. (See J Fries & J Brown, *Program*, vol. 21, no. 1, January 1987 for a detailed account.)

Drawing material from word processing or office automation systems into medium term storage has two aspects. There are high value, usually high cost, reports and other analytical documents, which naturally join the category of 'qualified sources'. There are also very many smaller documents – memos and briefings; position papers; records of meetings – which *may* have future value if efficiently retrieved when wanted, but whose individual value or probability of reuse does not warrant the cost of intellectual indexing. Now, conventional filing, which depends on some sort of classification scheme to place documents of this type in 'best' locations is notoriously slow and unreliable in retrieval by 'alternative' or 'cross cutting' topics, and full text retrieval offers, in principle, an attractive alternative. What needs some care is to make sure that not only the body of the document text is transferred to storage, but also the 'profile' or 'label' used while it was in a word processing domain, so that dates, provenance, security marks, expiry dates etc are not lost. Discipline is also necessary to ensure that titles are informative, that references to key personnel are explicit, and that related series of papers have some clear indicator in the profile or in the body to allow their collective retrieval.

Experience in a variety of organisations – and the City business appears to be no exception – indicates that a hard driven office automation (OA) work station will capture about 10 million characters (Mb) of text per year; a similar station in an administrative support group may collect 5 Mb per year, and a fairly consciencious personal secretary will type and correct about 2 Mb per year. About one fifth of this material may be discarded for ever within a few weeks, and only about 50 per cent has a life expectancy which justifies transfer to medium term storage. A determined approach to 'weeding', based on an explicit 'records retention/destruction' policy is a considerable aid to storage effectiveness. A complementary 'vital records' policy, suitably audited, helps executive confidence in the system as a whole.

Short-term storage and retrieval of documents, with the exception of the rather specialised litigation support applications, is not particularly well handled by free text ISR systems, at least of the present generation, because of limitations in their capacity to handle word processor 'mark-up', and the relatively high computer resource costs of frequent updating of inverse files. Most OA systems, and especially those using 'star' configurations based on a central minicomputer (DEC All-in-One; IBM System 36; for example), provide a 'drawer and folder' analogue of conventional filing to store text in progress and material held for a few months. These structures are, on a modest scale, simple and effective, and the retention of mark-up allows revision and reuse of material without difficulty. They also allow electronic filing to run parallel with conventional systems for *external* documents, most of which will for some time be in a form which is at least unhelpful for conversion. On the other hand, the systems tend to become unwieldy at a scale of about 20 Mb of stored text per group of five or six related users – and even with weeding, this represents only about three to four months' accrual.

ICL have an interesting development in this area – not yet widely used – where STATUS is seen as the medium to long term storage system for stable texts, but ICLFILE, which embeds the CAFS processor, is used at the office documentation stage. ICLFILE accepts that manufacturer's own NDT mark-up, soon to become an official version of Office Documentation Architecture (ODA). It also gives the user the choice of searching document profiles in CAFS at volumes of up to 20 Mb or so, and then periodically forming inverted indexes and using CAFS on the indexes at larger scales of storage.

Since medium and large-scale ICL machines now normally incorporate CAFS as a standard feature, this may be an attractive option for users of this equipment.

In conclusion, therefore, it is probably fair to say that the City is, in information terms, most *special* when fast moving, trading directed data are concerned. At the other end of the scale of information types, the text applications are least dissimilar to those found in administrative and professional services operations everywhere. Free text software has a role in the latter area providing much the same flexible storage and retrieval of stable, predominantly textual material, as it does in other application sectors.

End-users: threat, challenge or myth?

David Nicholas, Gertrud Erbach and Kevin Harris

The Polytechnic of North London

In spite of ostensibly favourable conditions, end-user searching of online text information retrieval systems among City firms is relatively uncommon Online searching is flourishing but is very much the province of librarians. Textline is the exception, being used fairly extensively by intermediaries and end-users alike Textline's success is attributed to shrewd marketing, user-friendly software, a wide and relevant coverage policy, its abstracts and early entry into the market. Job perceptions, job pressures, human nature and attitudes towards information technology appear to be inhibiting widespread end-user searching Intermediaries, who are actively encouraging end-use, or who are trying to get involved in the planning of integrated information systems, still seem to be in the minority

Rumour has it that thanks to desk-side micros, full-text databases, self-dialling modems, user-friendly software and expert systems, people are going to serve themselves to information and that librarians and intermediaries are in danger of losing their jobs (Ettinger, 1985; Jones, 1984). Certainly the trend in the service industries has been spectacularly towards self-service, do-it-yourself and decentralisation. Why should we believe that the information service/ industry will not follow the same route that retailers, grocers, banks and building societies have taken? (Arguably, with the opening of the first open-access library in the 1890s, we have long ago taken this route.) But does this necessarily, and inevitably, mean a loss of jobs? Banks have had automatic cash dispensers for some time now but there are still cashiers and banks now employ more people than they ever did. Perhaps librarians will not lose their jobs but – as in the case of bank cashiers – just do other things?

In an attempt to test out these assertions and provide answers to these very important questions we have gathered evidence from that area which, if such a revolution is indeed taking place, is most likely to be at its forefront – the City. The City has a high regard for information, an obsession with currency and rapid information retrieval; a willingness (and ability) to pay for information; a tradition of helping themselves to information and now, thanks to Big Bang, an abundance of technology: in essence it would seem to provide the perfect breeding ground for end-users.

Data was obtained from two dozen or so hour-length interviews, conducted as part of the British Library funded Information Seeking in an Information Society research project. Our gratitude to all those who co-operated, some of whom wish to remain anonymous.

Aslib Proceedings, 39 (11/12), November/December 1987, p 337–344 Printed in Great Britain

Online use and the success of Textline

'Online is in fashion now' says the Institute of Director's Pamela Bater. Indeed, judging from our interviews with intermediaries, analysts and dealers in banks, accountancy practices, management consultants and stockbrokers, the field is awash with databases of every kind. If we include the real-time and Prestel type services in our calculations, the typical organisation has access to six hosts, and it is not uncommon to have access to a dozen or more. Due to the nature of their business, most of the databases are concerned with company information 'Anything that one can think of on companies is interesting' (Gaynor Brown, Touche Ross & Co.). Reuters, Topic and Datastream are the most popular databases amongst the dealers and analysts. World Reporter, ICC, Jordans, Dun and Bradstreet, Predicasts and now McCarthy's score well with the intermediaries: Textline, discussed below, is a little unusual in that it is popular with both end-users and librarians

So what of the City's end-users? Well, with a long tradition of serving themselves to information (in many stockbrokers the library functions only as a storehouse) and a close familiarity with electronic news and price information services of the likes of Extel, Topic and Telerate, one might naturally expect that surely here in the City, the climate is right for the end-use of full-text databases like World Reporter and NEXIS, and perhaps also, for the more 'bibliographically' orientated services like Textline and Dialog. Certainly the City's analysts, stockbrokers and bankers are accustomed to online services, viewing information on VDU's and pressing keys to retrieve information. Furthermore, the necessary computer infrastructure is in place (networked micros, etc) and there is no shortage of funds to spend on electronic information gathering and retrieval.

So, it comes as something of a surprise to find a relatively poor take-up of online textual databases by end-users in the financial community, particularly when they are so well-served by economic and company databases. Textline is, as we have said earlier, the notable exception We have encountered a few people who are using Dialog, NEXIS, McCarthy's et al and heard rumours of such use, but nothing more substantial than that (admittedly our intelligence has largely come from intermediaries).

Why the success of Textline (virtually everybody we visited subscribed to it) and what possible reasons for the lack of penetration by others? Wherever we have gone we have been told that Textline is the most heavily used database, 'the one I wouldn't do without', 'the one end-users are most happy with' and 'the source they (the end-users) use to the exclusion of all else'. It is unusual to hear both intermediaries and end-users sing the praise of the same database. Why, then, is Textline so successful at tempting end-users to conduct their own 'bibliographical searches', when others have so lamentably failed and when we are being told by the hosts of full text systems that end-users really want full-text databases only? (Textline, although technically a bibliographic service – it provides abstracts – is probably better called a partial-text service, because it is searched by end-users as if it was a full-text service.)

First, launched in January 1980, Textline, was undoubtedly helped by being the first database to be targeted at the UK business practitioner market:

databases have come thick and fast since then with World Exporter in 1983, Nexis in 1984 and McCarthy's in 1986. Having established an early foothold, Textline grew rapidly by expanding its subject and source base to match the growing aspirations, sophistication and requirements of its users. Textline successfully frustrated the competition by continually expanding the horizons of the database to meet clients' growing information needs. If the database you are familiar with will do, why bother with others: end-users do not require the high levels of completeness and exhaustiveness preferred, or required, by intermediaries. (And if you require maximum recall you have, inevitably, to search several hosts/databases.)

Second, Finsbury Data Services, with the much neglected practitioner in mind, chose to provide in-depth coverage of business people's most pressing concern – company information – and much prized (and, until then, neglected) information source – the newspaper: this at a time when others were still expending their efforts on academics and their research journals, and when the business coverage was largely American. While the academic market might have been safe (although it's turning out to be not so safe now), it is certainly tiny compared to the practitioner market, which has, in the last few years, shown an amazing degree of buoyancy, and offers nowhere near the profits.

Third, Finsbury Data Services, highly conscious of the need to be up-to-date in the business community and noticing no doubt the real-time services to which their potential clients had grown accustomed, took its lead from them and provided the first – and still the only – daily updated financial online bibliographic service. In the City there is little tolerance for the traditional economic information systems like ABI/Inform, which serve up economic data months late which may be good for the academic, but not necessarily good for the analyst or broker.

Fourth, Textline's menu-driven command system has been an undoubted success with end-users, most of whom do not use the system often enough to retain a knowledge of its commands. A simple service was made even simpler by means of a dedicated terminal with function keys doing all the 'hard work'. Ironically, its somewhat slow and cumbersome retrieval system, much favoured by end-users, is much criticised by intermediaries.

Fifth – and perhaps most surprisingly – Textline's abstract-based information system has come in for much praise. Despite the full-text host's running-down of bibliographic abstract-based systems, users in fact find Textline's abstracts most helpful. Pamela Bater believes that end-users are interested in the facts and do not want the journalist's waffle – and therein lies Textline's success. Gaynor Brown is of a similar opinion believing the abstracts 'are sensible and very satisfying for the (end) users'. Most stockbrokers, bankers and analysts are over-loaded with information and welcome any attempt to make the 'pile' more manageable. By not only condensing information but by rationalising it also Textline does just this. Because of various copyright squabbles (its full abstracts inevitably closely resemble the origin), Textline is going further down the full-text road, though by doing this it might well leave some of its users behind.

Sixth, related to the success of its abstracts, is the success of its retrieval language. Textline is unusual in introducing to a quite unsophisticated and unprepared user group controlled vocabulary and its delights, together with the voluminous thesauri and code manuals that go with it. Many in the information world have written off controlled vocabulary and abstracts as being unsuitable for end-users but Textline seems to have proved them wrong. Admittedly, end-users do not employ all the refinements of the service – many are quite content to run just company mnemonic searches – but most importantly, they have not been put off the system because of its so-called sophistication.

Last, could it be that librarians play a part in Textline's success story? Perhaps, seeing that end-users could get something reasonably useful out of Textline with minimum effort and quite happy to rid themselves of tiresome and repetitive work, they have actively encouraged users to search it themselves (Mole, 1986).

End-users few in number

Why then the apparent lack of success of the others? Textline is, of course, only brushing the surface itself. It could be that Textline has cornered the (limited) market for text retrieval systems, though this does seem unlikely or perhaps the librarians we have talked to are really right and end-users are really not interested in or capable of doing anything more than the undemanding routine company search (on Textline of course). Job perceptions, job pressures, human nature and attitudes towards information technology as a whole may conspire to prevent many users from conducting their own online searches.

Job perceptions

There are many in business who like to delegate the information search to either the office junior or the librarian: the fact that the search can now be conducted electronically is unlikely to change things. 'Users have these flashy MBA's from Harvard and certainly don't think they have been employed (at £30 per hour) to do their own information searching' says one information officer to an international management consultancy.

The view at the Orion Royal Bank is that managers would rather spend their time analysing and manipulating data than searching databases: 'that's how they see their time best spent'. 'Although a manager knows how to make a coffee, he doesn't do it himself.' Determining which database is right for a particular query is already difficult and time-consuming and it is unlikely to get any easier – certainly not in the short term anyway. 'Executives wouldn't do that job: they do not want to deal with the nitty gritty; they rather expect someone else to do the job for them.' (Institute of Directors)

Job pressures

Most managers and executives already find themselves overworked and overloaded with information and are unlikely to show much interest in something that is likely to increase the workload (albeit temporarily) and the information yield (online will not render existing information channels obsolete). Consider, for instance, a Phillips and Drew trader: his day starts on the train where he acquaints himself with the contents of the *Financial Times* and *The Times*. He arrives at work at 8.00 in time for the analyst's morning briefing, at which 'best buys' and interpretations of economic and company events are offered. His desk (no more than 4 ft 2 in size) is buried in today's crop of analysts' reports, which he then proceeds to go through to see what he can throw away – he then scans the remainder believing 'there is no substitute for a piece of paper'. The rest of the day is fully absorbed by the actions of the market, which are relayed to him through his desktop Topic screen, and the telephone (in any hour he is likely to make 20 phone calls and receive five himself – almost one every two minutes). In between looking at the screen and talking on the telephone he is likely to be in consultation with his dealer colleagues. Online is going to have to grab what little time he has left – as you might imagine, not an easy feat. At the Institute of Directors the story is no different: 'people are generally under a lot of pressure and are really not bothered how they get information – they just want it'.

Human nature

Business people believe very much in the benefits of personal contact – a good deal of business is, of course, transacted that way. Information is exchanged over the telephone and at lunch meetings. Much time and money is spent to ensure the communication lines (between client and broker and between broker and analyst) are good. Indeed, in many ways the City, though an international trading centre, is very insular. Many brokers are attracted to the job in the first place because of the opportunity to develop personal contacts and many are, of course, appointed because of their own personal contacts. The trader with the best personal connections – clients are often personal friends – will often win the order as much still depends on trust and reliability. The opportunity to manipulate or retrieve data was not one they sought; neither were their employers looking for someone with such skills. The situation is, however, slowly changing: in recognition of the importance that electronic information services are now playing, firms like Phillips and Drew are looking for computer literate and more information conscious stockbrokers.

Attitudes towards information technology

'People are strangely reluctant to use electronic equipment', 'they are not used to using things', and 'end-users are frightened by Datastream' comments Lazard Brothers. Indeed, some of the merchant bank's users still refer to the terminals as 'the magic machine'. And at Arthur Young there are still some users who think the online computer in the library can do anything (and are very disappointed when it can't).

Largely in recognition of the existence of such attitudes Phillips and Drew have developed an information system named Gemini which does not require their stockbrokers to type in commands to the system (stockbrokers generally can't type, more importantly perhaps, its something that secretaries, not highly paid stockbrokers, do); instead a hand-held mouse is used to instruct the system by pointing to a menu of commands (presumably mice are free from possibly unhelpful associations). At other organisations we have heard too that the lack of typing skills makes many financial professionals uncomfortable in front of the keyboard. Certainly too, desk-side online access, which some believe will give the necessary impetus for online searching, is still some way off for most people. Even the technological leaders in the game – firms like Phillips and Drew, Linklater and Paines, and Morgan Guaranty – are only just beginning to establish networks which will give their brokers, dealers, analysts and other direct and convenient access to information systems. So, it could still be early days. However, it does seem that, with some notable exceptions – Ernst and Whinney and Morgan Guaranty are planning to network Textline and Phillips and Drew network World Reporter, World Exporter and Magic through their Gemini system – most firms are concentrating their efforts on internal data and the real-time systems and neglecting online textual databases.

Maybe we are guilty of expecting too much too soon from online. It has taken Textline the best part of six years to get where it is, possibly in another three years World Reporter, NEXIS and Co will have become established in their own particular niches.

The role of the librarian/intermediary

In our quest for an explanation of low end-use amongst those in the financial community we must not neglect the role of the library. Virtually every library we have visited is brimming with electronic databases, many are eagerly acquiring more, and most appear to have unlimited online funds (it seems that in many cases it is the librarian who decides upon the ceiling). Their keenness for online would seem to stem as much from its status-enhancing qualities as from its (alleged) efficiency and cost-effectiveness. Through online they can rid themselves of such low-status and tedious jobs as news-clipping and filing company cards. And what with the relative low-status of information jobs in the City (information assistants are commonly paid less than general secretaries and information heads are paid less than half the going rate for junior stockbrokers), one can hardly blame them.

Given the librarian's dominant position as monopoly user of online (most facilities even if available to end-users, are located in or near the library), a highly developed sense of territory (some jealously guard the facility 'people would come and play with it (Textline) and that is too expensive'), a reluctance to see their task as being anything other than serving-up information within the library's four walls (only a few actively encourage end-user searching or indeed use the facility in any dynamic sense – SDI is almost unheard of, for instance) there does seem little incentive, need or opportunity for end-users to do their own searching. Will the librarian's innate conservatism, parochialism and scepticism on the one hand, and a fear for their jobs on the other, stultify end-user searching and block its progress? Whilst there is some evidence to support this view some librarians have adopted a different, more positive, approach. At one management consultancy the librarian actively encouraged end-user searching: she has no desire nor time to do the everyday mundane online searches; she sees her role more as that of a trainer and specialist searcher, more an information manager than an information provider. At Phillips and Drew, where the librarian has virtually no contact with the traders, it will be interesting to see whether online textual searching will make greater headway as a result. (The project is currently studying online use in Phillips and Drew.)

It is very noticeable from our interviews that intermediaries do not feel threatened by the prospect of end-use: most are convinced that intermediaries will be necessary, at least in the near future (but then they would say that wouldn't they?). Perhaps the general buoyancy of the financial sector engenders in them a false sense of security: no one is asking why Phillips and Drew can get along so successfully without a professional librarian; no one is particularly concerned that librarians are not party to networking arrangements that are being set in train; no one is worried that users will by-pass the library for online support (and take things in their own hands) if librarians continue to jealously guard the online facility; and trusting in the gratefulness of their present users (who are anyway a minority in most firms) they are overlooking the fact that the new recruits are likely to have a different attitude to computers and information, which is likely to lead to a change in work routines.

Sadly, librarians seem not be heavily involved in plans to create integrated information systems nor do they seem to have any significant role in the overall co-ordination of information activities within City firms. Many seem to have only the vaguest understanding of the end-user information systems operating within their company. A typical response to a question about end-users was this: 'I think law has got some, finance too, but I am not sure what they are using (Topic? Reuters? Lexis?) or who is using them' (the terminals). Few show any interest at all, indeed find it strange to be asked such questions: their information concerns would seem to reside wholly within the four walls of the library – an attitude which is somewhat at odds with what is happening elsewhere in the firm (and society for that matter). At one merchant bank, where we were shown the dealing room (as something of a novelty) the librarian could not distinguish between the various information services being displayed on the banks of VDUs. The fact that they were supplying *information* in response to an obvious and pressing *need* (the dealers were 'glued' to them) seemed to have escaped her. What with a marked trend towards decentralised, self-help information systems the future looks bleak for librarians of this persuasion. Another opportunity – perhaps the greatest and last – might well be lost.

Conclusion

The evidence, though sending contradictory signals in places, does appear to suggest that, in the short term anyway, the future is not in doubt for the intermediary in the financial sector: indeed prospects look very bright. Certainly online is rapidly becoming *the* means by which financial information is retrieved but it remains very much the domain of the librarian or professional searcher. End-users appear to be content with the real-time, largely 'passive' paging systems and show at present only a limited (and often passing) interest in text retrieval type databases. There is though some over-lapping of interest, with some end-users using Textline (surely the online end-user success story) and some intermediaries using Datastream (patently the most complex of all the databases). But there seems to be little to suggest that end-users will encroach much further upon the librarians' domain. There is definitely no common or clear online end-user policy: the same arguments used in favour of end-users in one place are used against them elsewhere. Most librarians though see technology and not the end-users as the real challenge.

To the neutral observer the medium and long term prospects do appear much less rosy. The systems which will provide end-users with convenient desktop access to information are only just beginning to be put in place, so to discount at this early stage the forecasted surge in end-user searching would be premature. Most worrying of all though is that many librarians seem not to be party to these new developments: decisions as to which online databases should be networked, which information retrieval software is most appropriate and what internal information should go on to the system are being taken without them. There is then the potential risk that they will be by-passed (and be regarded as an information 'side-show').

Perhaps we should not look to the large, long established companies, with their well entrenched library systems, for the first signs of significant levels of end-use, but to the small companies who could never justify employing a full-time librarian but who nevertheless have a pressing need for information which can now be more than adequately met by online. To them, undoubtedly, online is going to be attractive and, maybe cost effective.

REFERENCES

1. ETTINGER, A. as cited in *Aslib Information,* **13** (1), January 1985, 21.
2. JONES, K The effects of expert and allied systems on information handling: some scenarios. *Aslib Proceedings*, 36 (5), 1984, 213–217.
3. MOLE, A. Personal communication, 11 June 1986.

Issues facing learned libraries

David Hall

Director, London Science Centre

The London Science Centre communicates with some 560 learned societies. Nearly all have libraries, archives and collections of various kinds, forming individually, as well as together, unique collections of special value to mankind in scholarship and learning. The size of library varies from a few shelves, perhaps in a university library, to a fully international information service making maximum use of information technology. During recent years librarians and library committees of societies have seen and are seeing a period of great change brought about partly through the 'explosion' of information technology, and partly through changing values and attitudes.

Selectivity

There has been an enormous increase in the number of publications and societies that have naturally been reviewing their collections of journals. They will be considering many factors such as:

- Space. The librarian will have some idea of the space available and a priority list of the publications being collected.
- Exchange value of a journal will be assessed. Where it is a straight purchase a different view might be taken.
- How often is the journal used? Is it an obscure journal, and if so what sort of value can be placed against the scholarship obtained from it? If it is only used once or twice a year is it vital to the society's subject?
- Is it part of a very long standing collection which should not be broken lightly?
- Is there an identical collection in a library nearby, and what is their policy towards keeping it? Could arrangements be made for members and visitors to make use of that particular journal in the other library?

Space and finance

Financial considerations feature in the amount of space allocated to the library. Most librarians will wish for more space and for more shelving. How does a society measure this? To assess the cost of the library it would be unrealistic merely to take the salaries, the books and publications, the upkeep of them, and other costs purely closely associated with the library. The society will consider apportioning all the overheads including heating, lighting, wages of

Aslib Proceedings, 39 (11/12), November/December 1987, p 345–348 Printed in Great Britain

common user staff such as porters, an amount for depreciation of the library itself, and also for other common user parts of the society, and all the other financial outgoings which cannot be attributed directly to a budget centre such as the library and information service or the lecture theatre and conference rooms etc. The apportionate of overheads might be allocated by area (bad luck librarians!) or by the number of staff involved. Against the total cost will be any income derived from the library. This might include grants or an apportionment of the membership subscriptions. Most libraries will probably find that they cost the society a considerable amount of money.

Societies will always be seeking to save space in libraries. Modern shelving, while expensive, can be highly saving in shelf space, leaving further floor space for other use or for the growth of the library. Note will be taken of structural capabilities of the building to take a greater mass. Certain documents and books might be put on microfiche and kept elsewhere, but the cost of using microfiche and of the change of service to members and those carrying out research should be carefully assessed.

Many societies with libraries of value to the public will doubtless consider charging for entry for non-members. In considering this the large administrative load of sorting members from non-members, and of charging and invoicing etc should be assessed. Furthermore, if members covenant their subscriptions, the Inland Revenue is likely to wish to stop the covenants if members make such a personal gain against the public wishing to use the library.

Security

This is perhaps a major issue. The number of international thieves after really valuable books has increased in the last couple of decades. They often appear in a library as entirely reputable and knowledgeable people, and in fact they seek out one or two books, or even prints or maps from them. John Maggs, of Maggs Brothers, explained to me that the international network of rare booksellers was very close and active against such rogues. He illustrated this with the story of a girl who took an extremely valuable book to a seller in Melbourne and explained that she had found it in her recently deceased aunt's attic. The buyer was much interested, and noticed and was suspicious of, a current book price marked in the book He made a quick international call to colleagues in UK and the story ended in the knowledge that the girl had brought the book with her from her previous job in UK where she had taken it as unaccessioned stock.

Societies are considering some of the following:

- Marking books with UV detectable marks.
- Installing electronic detection systems which involve work on every book in the library. This is a very considerable expense.
- John Maggs explained that libraries are now installing video film where inexpensively continuous slow moving frame by frame video can be installed to record a constant picture of all those entering

or leaving the library. While such a system might not catch a thief red-handed, it can identify people who have used the library in case any are known to the police or booksellers.

- Placing locked grills in front of bookcases – this can be extremely costly and gives an inaccessibility in appearance as well as in fact.
- Not allow briefcases, coats etc into the library.

Reviews

There is a changing approach to the payment for reviews due to attitudes of doing something for nothing. In some cases review copies are becoming less frequent and there are fewer people willing to review for the prestige and interest it might give.

Care and preservation

This is a constant battle of assessing the cost of doing something now against the ever-increasing cost of doing nothing and leaving material to deteriorate. Most libraries realise the very grave responsibility they have in holding a very important part of the national archive.

The Bibliographical Society has pointed out that with decreasing funds available to universities, collections kept there are likely to be in increasing danger. They quote the possibilities of:

- Damage, even destruction for want of proper conservation.
- Relative inaccessibility for want of lists, catalogues, indexes etc.
- Complete inaccessibility for want of staff to communicate them to the readers.
- Stagnation for want of staff to concern themselves with acquisitions.
- Dispersal, whether as whole or in part, when a university is forced to contemplate 'selling the silver'.

Money and advice are usually the two prime requirements. The British Library makes grants under the British Library Act, and their R & D Department is the one concerned. The British Library has also opened the National Preservation Office which provides an Information and Referral Service on preservation issues, encourages co-operative initiatives, and advises on good practice and information concerning preservation. NADFAS do a tremendous job in actual preservation work. Trust funds from charities are overstretched, and many libraries are now approaching industrial and commercial concerns with interests in their specific subjects for financial support. Within the society there is always a fight for finance against other budget centres in that society.

Automation

For some learned societies, though happily few, it is pretended that automation is not there and that the same catalogues, the same typewriters, and the same practices continue year after year and decade after decade. However, most are keeping a careful watch on progress in automation, being ready to present cases for decisions by societies at the appropriate time. Quite clearly the microcomputer is playing an increasing part. At a recent London Science Centre seminar held in the house of the Royal Geographical Society we saw a simple microcomputer programme being used for the cataloguing of photographs of a major project in Oman, and then also the ordering of duplicates from the huge collection. The August 1986 issue of the Learned Societies Newsletter describes the progress of the Institute of Metals. They have a marketing approach to a library and information service which provides abstracts of journals, translation service, machine readable bibliographic database etc. The Institute has an agreement with the American Society of Metals and is a prime example of a significant financial exploitation of assets for the benefit of members and scholarship generally. There are now quite a few large shared databases such as BLAISE of the British Library, OCLC and many others.

Conclusion

Learned societies continue to play a vital role in scholarship in Britain, and the Library and Information Services are the most important elements. Being a librarian is probably far from lucrative, but must be one of the most rewarding and exciting jobs in this period of change. Learned society libraries are keeping up-to-date with modern information technology, assessing the costs and feasibility of change, and making the decisions when appropriate. I certainly view the job of the librarian as one where the professional expertise is expanding at a great rate, and one to be much valued by learned societies.

The evaluation of library and information services in times of economic restraint: the university view

Elizabeth M. Rodger

Formerly Librarian, University of Sussex Library

First, it is necessary to define some of these terms: The Oxford English Dictionary *defines* to evaluate *as 'to work out the value of, to give it a quantitative expression; to find numerical expression for', and* evaluation *as 'the action of appraising or valuing, a calculation or statement of value'* Times of economic restraint *began in the latter 1970s, but I shall concentrate on the 1980s, the period which coincides with my period of office as the manager of a university library.*

Why should we be concerned with evaluation in times of economic restraint rather than in times of growth? Basically it is because there is less money with which to attempt to do the same, or more, than before: it is important to everyone concerned that nothing is wasted. The higher education sector, along with most other sectors of public funding, has been subject to a series of cuts in its funding. The University of Sussex, for instance, had its funding reduced by 20 per cent between 1981 and 1984, and is now facing a further reduction by 1990. This is not atypical. Up to now the Library at Sussex has had similar cuts to those imposed upon the rest of the University, but in the next tranche it is proposed that the Library cut should be nearer 10 per cent, which is more than twice the institutional cut. All universities are concerned with cost effectiveness – last year the Committee of Vice-Chancellors and Principals (CVCP) published a report[1] on this subject recommending that universities give increased attention to accounting, performance indicators and so forth.

Now we must look at the various bodies who are concerned about evaluation in practice:

Government

Higher education is funded from central and local government through the Department of Education and Science (DES), the University Grants Committee (UGC), and the National Advisory Body (NAB). Universities receive the bulk of their funds from the UGC, which is in turn funded by the Treasury. Polytechnics and colleges are dually funded from the DES and local government through NAB. Each university receives a block grant from the UGC, not usually earmarked in any way, and also student fees. The government looks at the equation:

Aslib Proceedings, 39 (11/12), November/December 1987, p 349–354 Printed in Great Britain

$$\frac{\text{Exchequer grant} + \text{Fees}}{\textit{Student load}} = \textit{Unit cost}$$

The student load is the number of full-time equivalent (FTE) students; it includes both undergraduates and postgraduates in all subjects, both part-time and full-time. Neither government nor the UGC have a particular interest in libraries in their concern for low unit costs and value for money, that is, apart from occasional earmarked capital grants for buildings and exhortations to 'protect the book fund'.

Institutions

Institutions themselves have autonomy as to how they spend their money. Some may spend 3 per cent on their libraries, others 5 per cent. Universities also have a little extra funding, namely research funds and other income and endowments etc. Each year the finance officers make returns to the UGC detailing how their funds have been spent for their accounting year August to July. This is published[2] about a year afterwards. From this comparisons and evaluations can be made. For libraries, the figures for total library expenditure, books, periodicals, binding, staff, and other are given.

Librarians

In parallel with this, university librarians also collect statistics which are collectively published by the Standing Conference of National and University Libraries (SCONUL)[3]. Not only are these figures much more detailed (50 or so heads) but they are also collected by librarians rather than by finance officers.

The statistics referred to above have been in terms of expenditure, or inputs. They show what institutions pay for their libraries, but give no indication of what they get for their money. SCONUL is aware of this gap and is already attempting to fill it by making a second collection of statistical data, and the first year 1984/5 has recently been published[4]. Again, this is a fairly detailed collection of data including such elements as accommodation and stock, acquisitions, library users, library occupancy, use of services on sample days and weeks, loans, reservations, and inter-library loans.

It is then possible to match these two sets of figures – inputs and outputs – to make rather more meaningful evaluations of services. For instance, it is possible to set direct costs of inter-library loans (i.e. vouchers, postage, transport) against the number of requests. However, this is still imperfect as the staff element is not yet broken down in a similar way, and it is not possible to evaluate services on a national basis. Individual librarians are, of course, increasingly attempting to accurately assess staff costs of the various elements of their service. Table 1 shows how this can be done for the University of Sussex Library making comparisons over successive years.

TABLE 1. *University of Sussex Library—inter-library loan costs*

	1982/83		*1983/84*		*1984/85*		*1985/86*	
Academic related	£11435	30%	£12385	31%	£13145	28%	£11784	23%
Clerical	£15761	41%	£17212	42%	£19314	41%	£20805	41%
Staff costs	£27196	71%	£29597	73%	£32459	68%	£32589	64%
BLDSC forms (net of refunds)	£6985	18%	£6091	15%	£10749	23%	£11841	23%
Postage & carriage	£2370	6%	£3185	8%	£2594	5%	£4192	8%
Telex	£1836	5%	£1578	4%	£1544	3%	£1892	4%
Subscriptions	£75	—	£138	—	£176	—	£229	—
TOTAL COSTS	£38462		£40589		£47522		£50743	
Sussex requests	6745	70%	7883	72%	7506	74%	8483	75%
Requests from other libraries	2956	30%	2999	28%	2653	26%	2827	25%
	9701		10887		10159		11310	
COST PER REQUEST	£3.96		£3.73		£4.68		£4.49	
Items borrowed	5870	75%	6365	76%	6042	76%	6660	79%
Items lent	1971	25%	2044	24%	1858	24%	1743	21%
	7841		8409		7900		8403	
COST PER ITEM	£4.91		£4.83		£6.02		£6.04	

Users

Now let us look at the users of library services. Unlike government, institutions or even librarians, they do not have spending power. However, their evaluation is all important and their voices – especially those of academic staff – are significant in various committees and other decision-making bodies.

First, let us consider how students evaluate libraries. They look for long opening hours so that they can work in the library, consult and borrow books. A recent SCONUL survey[5] shows that 45 per cent of university libraries have reduced their opening hours in the last five years – mainly at non-peak times, that is in the evenings, weekends and vacations. Students also look for availability of the books they need with sufficient duplication and control (i.e. short loan periods) of the material in greatest demand to allow all students to have a chance of getting hold of material quickly. Reduced book funds and staff have an impact upon this. They are less concerned with other aspects of library service, except perhaps photocopying.

Academic staff have different criteria by which they judge library provision. To some extent they are more concerned with potential long term use than with actual use now. Their main concern is how well the library is able to maintain its level of acquisition of books and periodicals, to provide the widest possible choice, should they ever conceivably need to use them. In addition they want a quick and efficient inter-library loan service, and to be helped with 'awkward' material like archives, government documents, and even microforms. The SCONUL survey of funding cuts[5] showed that 62 per cent of university libraries had reduced book purchases by between 14 per cent and 45 per cent, and that 60 per cent of these libraries had reduced their periodical purchases by between 4 per cent and 13 per cent.

Other factors

So far we have looked at inputs of cash from official sources and outputs of services. Is it simply a question of producing more with less, or are there other factors we need to take into consideration? Over the past decade in parallel with reduced recurrent funding in real terms, most UK university libraries have experienced considerable growth in the use of computer systems to support their services. The capital required has usually come from UGC equipment funds allocated to each university. Computerisation has helped to cope with the increasing level of demand for library services – so much so that in many libraries users would see a positive improvement in library services during this period of economic restraint. Online public access catalogues (OPACs) are one manifestation of this. In addition, computerised circulation systems, for instance, have the potential to provide a vast amount of management information which can be used to inform decisions on book selection, loan periods, opening hours, etc. For example, at Sussex we have been able to see which sections of our stock, which authors, which titles are used heavily and which are not used at all. As a result we have been able to increase provision in the former at the expense of the latter. Table 2 shows the levels of acquisition of books in selected subjects for the long loan collection and the amount of use, in the form of loans, they have received in the two years following their purchase. An attempt is being made to reduce the purchase of books not borrowed at all and to make more equitable provision for subjects at both ends of the popularity scale. Although our acquisition levels have had to fall, the books we are now not able to buy are those which would not have been used anyway, so no-one has missed them!

TABLE 2 *University of Sussex Library loans of purchased books in long loan collection*

Subject	*Books bought for Long Loan* A	B	C	D	*Average loans in 2 years* A	B	C	D	*% with nil loans in 2 years* A	B	C	D
Computing	56	51	178	141	5.65	7.22	5.77	7.30	25.0	5.9	14.0	5.6
Chemistry	85	49	103	76	4.13	4.72	4.51	4.41	14.1	6.4	14.0	10.7
Economics	671	610	763	621	3.91	3.81	3.90	3.86	26.8	23.8	23.7	20.6
English	767	628	521	547	3.26	2.91	3.60	3.64	31.6	36.2	28.3	22.8
Law	114	77	76	68	2.89	2.51	3.43	3.42	45.6	31.6	28.4	19.2
Medicine	290	237	373	218	3.03	3.67	3.23	3.16	28.6	19.3	24.5	22.4
History	1017	556	554	578	1.83	2.35	2.36	2.62	49.2	40.6	37.6	36.8
Italian	288	151	71	66	0.5	0.56	1.24	1.76	74.7	72.2	54.9	52.2
All subjects	8797	8279	9959	8629	2.8	2.79	3.23	3.12	27.3	35.1	29.0	24.3

A Books bought in 1980/81 and loans during 1981/83
B " " " 1981/82 " " " 1982/84
C " " " 1982/83 " " " 1983/85
D " " " 1983/84 " " " 1984/86

The Long Loan collection contains c.350,000 volumes and attracts c.230,000 loans (of up to 4 weeks).

Another small plus in our equation is income generation. At one time it was not considered appropriate to charge for library services, even to those who otherwise had no connection with the institution. Now most libraries make a realistic charge to outsiders – individuals or corporate bodies – and thereby get some useful income. Academic libraries are now seriously looking at viable ways of marketing their services beyond their own institutions.

In summary, academic librarians are increasingly concerned with finding meaningful performance measures with which to evaluate their services. They do this not only to satisfy themselves as managers, but also to convince their institutional masters that they still need the same relative share of the institutional cake, even if the cake itself is shrinking.

REFERENCES

1. Committee of Vice-Chancellors and Principals. Steering Committee for Efficiency Studies in Universities. Report. 1985. [Jarratt report].
2. University statistics. Vol. 3: Finance. University Grants Committee 1980 onwards.
3. SCONUL Expenditure Statistics, 1984-85, and estimates, 1985-86. Standing Conference of National and University Libraries. 1986.

4. SCONUL Statistical Database Part II: Library Operations 1984/85. Standing Conference of National and University Libraries 1986.
5. SCONUL Survey of funding cuts 1979/80 – 1984/85. Standing Conference of National and University Libraries. 1986

Factors affecting information technology transfer in developing countries

Dr Muhammad A Marghalani

King Abdul Aziz University, Saudi Arabia

This paper underlines vital factors involved in the transfer of information technology in developing countries and discusses associated problems. It provides a number of feasible suggestions for designing a system geared to the needs and resources of a developing country.

The problems faced by an organisation when introducing information technology applications have been debated internationally. The identification and characterisation of these problems have been obtained mostly from case studies related to the developing countries. This paper presents some sociological factors which are challenging information technology transfer in developing countries, and provides some direction to overcome these obstacles in order to achieve optimum benefits from these innovations. The benefits stemming from introduction of computerised information technologies are well-known: to provide enhanced user satisfaction, cost effectiveness, integration, faster and simpler programmes, rapid responses and easier operational procedures.[1] It was generally assumed that most advanced technology used in developed countries could be transferred to the less developed countries smoothly and efficiently. However, in the early 1970s the desirability of direct and massive transfer of advanced technology to the developing countries began to be widely questioned. By then, it was becoming increasingly clear that the introduction of highly sophisticated, capital intensive operations could cause more problems than it would solve. Many developing countries incurred excessive foreign debts in purchasing, utilising and maintaining the highly sophisticated modern equipment.[2]

The progress of several of the developing countries is unsatisfactory. No doubt their Gross National Product and even per capita income have considerably increased, but the gap between the haves and have-nots in the society appears to have widened. They find themselves no nearer to the advanced nations. However, experts in the field of technology transfer have become aware of the importance of analysing the socio-economic conditions contributing to technological change. Svennilson, in a discussion of the strategy of technology transfer states: 'To establish modern technology in a developing country, we need to change: social systems and human attitudes; knowledge and human skills; and the physical implements in which technology is embodied'.[3]

Aslib Proceedings, 39 (11/12), November/December 1987, p 355–359 Printed in Great Britain.

Information technology is a term which encompasses the notion of the application of technologies to information handling (generation, storage, processing, retrieval, dissemination, etc.). Information has always been recognised as a very valuable commodity in the Western countries and in the mid 1950s and 1960s, the term information explosion was coined to refer to the increase in scientific technical and medical information being generated. Today we speak of the information revolution to describe changes in the handling of these increasing volumes of information. The revolutionary aspect is the result of fairly recent advances (mid-1970s to date) in computing and telecommunications technologies which are increasingly used in support of information-handling activities. Moreover, all sectors of society are affected by recent changes in the processing and distribution of information, and the changes are being made with both enthusiasm and anxiety.[4]

Al-Tayyeb provides an operational definition of technology transfer by stating: 'Technology transfer is the purposeful diffusion and adoption of a designed capability from a source to a destination.'[5] Therefore, we have to consider the information technology transfer and applications as behaviour-oriented. It is concerned not only with the transmission of ideas, but also with the impact of these ideas on the users. Hence, information and technology transfer emphasises the adoption of a particular idea, concept or technology as its major objective. As Sharpe states:

> 'Technology transfer is by definition a longer, more involved active process whose ultimate goal is to see the technology being transferred incorporated into the accepted way of performing everyday functions or solving everyday problems.'[6]

The Science and Technology Policy Instruments (STPI) Project suggests several factors which influence the production, diffusion, transfer, and utilisation of technological knowledge. With some modification of the STPI the following represent a general list of factors which affect transfer of information technology to the developing countries:

1	Economic	– labour intensive society – low availability of capital – inability to absorb recurring costs – expense of international competition.
2	Manpower	– lack of available trained personnel – low prestige of information professionals – lack of continuing education – inexperience in working in teams
3.	Physio-ecological	– limited resources – geographic isolation.
4	Cultural, demographic, and social	– large percentage of unskilled workers – language barriers – fear of modern technology – inaccurate expectations of technology

		– information seeking behaviour of scientists and technicians.
5	Political	– unstable governments – need for tight security and secrecy – constantly changing priorities – centralisation of decision-makers – lack of scientific impact at highest levels of government.
6.	Existing information infrastructure	– poor quality of telephone services – inadequacy of postal service – tight, stringent customs – inability to join telecommunication networks – lack of library and information standards – absence of sufficient informal information flow [7]

It should be noted that the categories are not entirely exclusive; a great deal of overlap exists between conditions and factors. Thus, the low prestige of information-related positions is listed under manpower, however, it can also be viewed as a cultural/social factor. The lack of equal access and equal benefits to information sources in developing countries remains valid. The use of information technology is dependent upon the appropriateness of information accessed. Since the lack of equal access to information still prevails in the developing countries, the technology transfer does not play a significant role in problem solving. The right to seek information is a fundamental right and the growing belief is that everyone should have equal access to information. But this does not ensure equal benefit to everyone. There is lack of awareness of the relationship between organisational management systems and computer-based information systems in most developing countries. New technologies must:

- use abundant resources and elements of production;
- use the existing information infrastructure;
- consider implications of output;
- take into account local attitudes, practices, and traditions;
- stimulate indigenous activities;
- be both useful and feasible to the recipient nation;
- consider the specific characteristics, attitudes, and needs of the different levels of users.[8]

There must be adaption of transfer technologies to the situation in developing countries. Developing countries need information technology for increased productivity and better living conditions. So far the scientific and technological transference has taken the form of trying to learn as much as possible from the developed countries sending students to pursue graduate work, attending international conferences, knowing about successful application and obtaining all relevant literature. This approach has proved successful in the past, and should be encouraged.

See new directions are listed below:

1. Home grown information technology
Home grown information technology is adapted to the needs and resources of the country concerned. To be successful, this kind of effort requires government support because of the financial, regulatory, and policy requirements involved. The development of research units is one of the by-products of this approach.

2. Design a model
New methodological approaches and technical tools for the designing of a model of information technology transfer.

3. National policy
Development of information technology policies at a national level may result in mandatory regulations for all the activities. Such as: the establishment of a centralised national centre with some type of responsibility for all the resources, the establishment of guide-lines for the procurement processes, and the establishment of national research and development bureaux with the mission of adapting technology to the country's needs.[9]

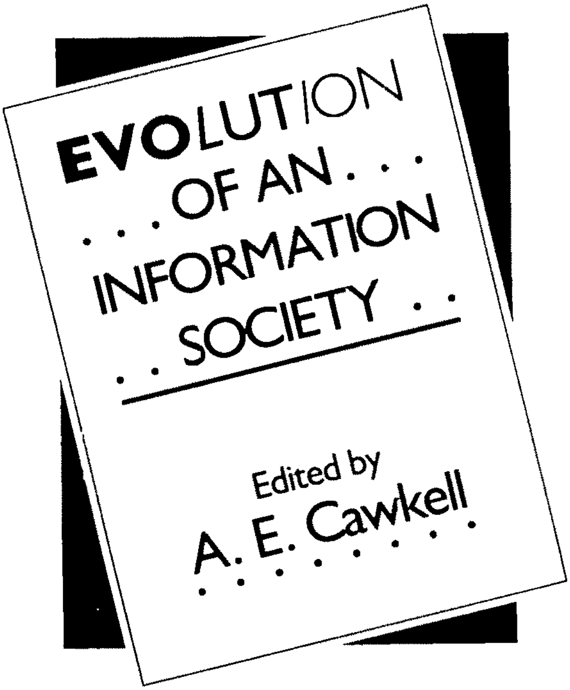
Technology has an impact upon every facet of society. Industrialisation through technology transfer is one of the most sought after economic objectives of developing countries. For several centuries man was totally dependent on nature to provide for most of his needs and the level of production determined the level of consumption. The application of technology to development has changed the situation. One characteristic of the change is the creation of the mass society. Development in communication and transport have brought about a quantum jump in social interactions leading to competition as well as co-operation among social elements. In turn, these lead to specialisation for achieving efficiency, differentiation in function, and interdependence. A second characteristic of the change is the scale of institutional forms. Technology makes available large amounts of energy at cheaper cost, more control over the circumstances of production and faster communication. Thus, as a society moves from a pre-industrial, to an industrial, and then a post-industrial stage, material property – for instance, land, labour and capital – may no longer be the main source of economic power; the only unique resource input into the social-industrial process would then be human knowledge.

Developing countries transfer technology into their societies in order to improve the well-being of their people. In order to be successful the technology has to be appropriate and adapted to the specific requirements of the developing countries. History has shown that a period of political and legal stability precedes the development of technology in a given society, and stability may be an essential prerequisite for systematic technological development.[10]

However, there are dangers in leap-frogging inappropriate technologies may be selected to be transferred to a society not yet suitably developed.

REFERENCES

1. SIBLEY, E. H. *The impact of database technology on business systems.* Information Processing. 77. North Holland Publishing Co., 1977.
2. MUNN, ROBERT F. 'Appropriate technology and information services in developing countries.' *International Library Review.* **10** (Jan 1978) 23–27.
3. EVES, BETH K. 'Transfer of information technology to less developed countries: a system approach.' *Journal of the American Society for Information Science.* (March 1981) p.97.
4. GRIFFITHS, JOSE-MARIE, 'Main trends in information technology.' *Unesco Journal of Information Science, Librarianship and Archives Administration.* **4** (December 1982) p.148.
5. AL-TAYYEB, M. A. *Information technology transfer to Saudi Arabia.* Dissertation. School of Library and Information Science, University of Pittsburgh, 1982 pp. 77–78.
6. SHARPE, W E., et al. *Water resources technology transfer. a guide.* University Park, PA: Pennsylvania State University Institute for Research on Land and Water Resources. January, 1977. p.6.
7. EVES. *op cit.*, p.99.
8. *Ibid.* p.99.
9. PEREZ, VICTOR L. 'Factors challenging information technology application in developing countries.' *Information and Management* **3** (1980) p.146.
10. AL-TAYYEB. *op. cit.*, p.78.



EVOLUTION . . . OF AN . . . INFORMATION . . SOCIETY . .

Edited by

A. E. Cawkell

An anthology of important literature on the evolution of an information society, containing extracts from such classics as:

- ★ H. G. Wells' *World Brain*
- ★ Arthur C. Clarke's *Extra-terrestrial relays*
- ★ Claude Shannon's *A mathematical theory of communication*
- ★ Manfred Kochen's *New concept of an information society*

Essential reading for those interested in the ideas, concepts and technological advances that are shaping our society.

Price: UK £35 (Aslib members £29.50); overseas £39.50 (Aslib members £35)

Aslib

Publications (Sales), Aslib,
Information House, 26-27 Boswell Street,
London WC1N 3JZ.
Tel: 01-430 2671

ISBN 0-85142-211-X, hb
234 × 156mm; 320pp
September 1987

HOW TO FIND THE BEST PERSON FOR YOUR JOB VACANCY

Can you afford the time it takes to place a job advertisement and wait for the results?

Do you want to sift through a stack of applications to create a workable shortlist? And produce a stack almost as high of polite rejections?

No?

Aslib can help you find the best person for both permanent and temporary vacancies, in all kinds of information units. Aslib Professional Recruitment Ltd. offers a reliable, confidential service.

Because we maintain a live file of information staff looking for career development or job opportunities, we can provide a shortlist tailor made to your requirements **within 24 hours**.

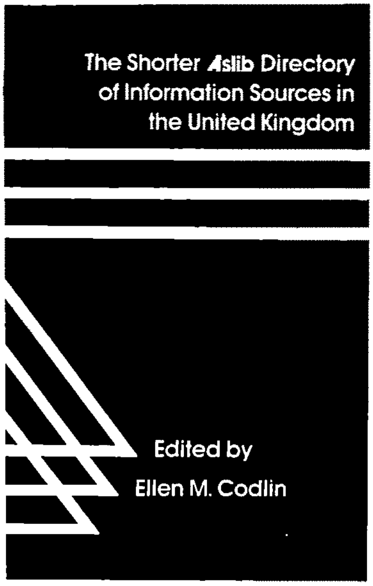
Whether you are thinking of recruiting staff or using the service for your own next career move, contact Alice Gittoes today on 01-430 2671 or write to her at Aslib.

Aslib

Professional
Recruitment
Limited

THE FAST AND EASY WAY TO TRACK DOWN INFORMATION

Concise, comprehensive and authoritative, The Shorter Aslib Directory is the ideal single source reference tool for librarians, journalists, students, writers and researchers of every kind, and anyone whose catholic tastes incline them to journeys of discovery through its pages.


The Shorter Aslib Directory of Information Sources in the United Kingdom

Edited by Ellen M. Codlin

*Full entries with lists of subsidiary bodies and branches, where appropriate.

*A comprehensive and cross-referenced subject index.

*Cross-referencing in the main body of the text.

*An index of abbreviations.

*The title of the person in each case to whom application for information should be made.

*The inclusion of both telephone and telex numbers for each entry.

The Shorter Aslib Directory, edited by Ellen M. Codlin, is available from Aslib and costs £60 (£65 to overseas customers)*. Send payment to Aslib Publications (Sales), 26–27 Boswell Street, London WC1N 3JZ.

*£10 discount to members of Aslib.

254 × 160mm; 1986; viii, 590pp
ISBN 0-85142-199-7, hbk.

Aslib

let's have a CONFERENCE!

ELIZABETH LOWRY-CORRY

This comprehensive and realistic guide will help you to plan and run your conference successfully

Practical advice is given on such areas as:

- accommodation
- finance
- marketing
- presentation
- the social programme
- documentation
- the exhibition.

ORDER FORM

☐ Yes please, I would like ... copies of **Let's have a conference!**
Price UK £17 (Aslib members £15), overseas £19 (Aslib members £17)

☐ Payment enclosed ☐ Please invoice me

NAME ____________ DEPARTMENT ____________

ORGANISATION ____________

ADDRESS ____________

____

____________ SIGNATURE ____________

Aslib

Publications (Sales), Aslib, Information House,
26–27 Boswell Street, London WC1N 3JZ
Tel 01-430 2671

ISBN 0-85142-209-8, hb.
216 × 138mm, July 1987, 160pp

NATIONAL LIBRARIES 2

1977-1985

26 JUN 1989

Edited by

Maurice B. Line and Joyce Line

This collection of recent articles, edited by Maurice and Joyce Line, describing important developments in national libraries worldwide, is now on sale.

This reader identifies the nature and functions of national libraries in general and looks at individual libraries in all six continents.

National libraries 2 is a sequal to the editors' earlier reader, *National libraries (1955–1976)*, which is still available.

ORDER FORM

Please send me .... copies of *National libraries 2 1977–1985*

☐ Hardback at £35 (Aslib members £29.50); overseas £39.50 (Aslib members £35)

☐ Paperback at £25 (Aslib members £19.50); overseas £29.50 (Aslib members £25)

☐ Payment enclosed (Cheques are payable to Aslib) ☐ Please invoice me

NAME ______________________ DEPARTMENT ______________________

ORGANISATION ______________________

ADDRESS ______________________

____

______________________ SIGNATURE ______________________

Publications (Sales), Aslib,
Information House, 26-27 Boswell Street,
London WC1N 3JZ.
Tel: 01-430 2671

ISBN 0-85142-203-9 hardback
ISBN 0-85142-204-7 paperback
234 × 156mm; 408pp;
September 1987